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PATENT OFFICE NOTICES

Calculation of Issue Fees

Effective October 1, 1974, the Patent Office in calculating the balance of issue fee due, after payment of the Base Issue Fee specified by the Notice of Allowance, shall charge at the rate of $10 a page, as provided in 35 USC 41, for each printed page of specification (including claims) for which payment has not theretofore been received. As the Base Issue Fee includes a $10 charge for one printed page of specification, a balance of fee will be due for each patent which consists of more than one printed page. A "page" consists of one side of a printed sheet containing any amount of specification (including claims). A notification of the Balance of Issue Fee Due will be mailed in each such case along with the original patent grant.

The notice of February 4, 1970 published in the OFFICIAL GAZETTE [872 O.G. 1] and reproduced in the current "Consolidated Listing of Recent Official Gazette Notices . . ." [Item 53] is rescinded as of close of business September 30, 1974.

WILLIAM I. MERKIN,

Aug. 1, 1974. *Assistant Commissioner for Administration.*

Removal From Register

Pursuant to the provisions of Rule 347 of the Rules of Practice of the United States Patent Office in Patent Cases, a letter was directed on June 14, 1974, to the last post office address furnished to the Committee on Enrollment by each of the persons whose name and address appear on the following list. With respect to some of the letters, no reply was received within the period of thirty days therein set. Other Letters were returned by the Post Office with notations to the effect that the addressee was deceased, unknown, or had moved and left no forwarding address. Accordingly, the names of the following persons are being removed from the Registers of Patent Attorneys and Patent Agents.

LUTRELLE F. PARKER,

Aug. 2, 1974. *Chairman, Committee on Enrollment.*

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Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,770,804, R. O. Gettelman, SNOW REMOVER OF THE ROTARY TYPE, **filed** Nov. 18, 1969, D.C., E.D. Wis. (Milwaukee), Doc. 69–C–543, *Wisconsin Marine Company* v. *Lawn 'N' Sport Power Mower Sales & Service Inc.* Decision and order, plaintiff owner of patent, claims 1, 5 and 8 are valid, defendant's motion to dismiss the action as to claims 5 and 8 denied. Judgment entered for the plaintiffs on the issues of validity and infringement. Defendant's counterclaim dismissed, Mar. 11, 1974.

2,818,692, R. W. Bernstein, ABRASIVE GRINDING WHEEL, **filed** Nov. 30, 1971, D.C., N.D. Ohio (Cleveland), Doc. C71–1179, *Merit Abrasive Products, Inc.* v. *Bison Corporation.* Stipulation and order of dismissal pursuant to Rule 41(a)(1)(ii) directing that the complaint and the counterclaim are dismissed, Apr. 3, 1974.

2,859,949, J. J. Willard, FORWARD DISCHARGING TRANSIT CONCRETE MIXER, **filed** Apr. 8, 1974, D.C. Ind. (Indianapolis), Doc. IP 74–198–C, *R. W. Sims, trustee et al.* v. *MacWay Manufacturing, Inc. and Atlas Red-D Mix, Inc.*

2,920,977, B. F. Adams, CELLULAR SURFACE COVERING HAVING AN EMBOSSED APPEARANCE, **filed** Apr. 9, 1974. D.C. Pa. (Philadelphia), Doc. 74–919, *Armstrong Cork Company* v. *Congoleum Industries, Inc.*

2,959,555, Martin and Abel, COPPER AND IRON CONTAINING SCALE REMOVAL FROM FERROUS METAL, **filed** Apr. 2, 1974, D.C., N.D. Okla. (Tulsa), Doc. 71–C–346, *Halliburton Company* v. *The Dow Chemical Company.* Plaintiff has judgment against the defendant and is not liable to the defendant on its cross-claim, Apr. 2, 1974.

3,023,419, M. Z. Strahle, LEOTARDS AND COSTUMES, **filed** Mar. 29, 1974, D.C., W.D. Tex. (San Antonio), Doc. SA 74–CA–67, *Marie Zurbaran Strahle* v. *Spartan-Atlantic Family Discount Center.*

3,032,345, J. H. Emelson, TARGET GAME, **filed** Mar. 22, 1974, D.C. Minn. (Minneapolis), Doc. 4–74–153, *Ideation, Inc.* v. *Cadaco, Inc.*

3,039,773, Teeguarden and Teeguarden, BALLS, **filed** Nov. 8, 1971, D.C., C.D. Calif. (Los Angeles), Doc. 71–2659–ALS, *Harry W. Teeguarden and Lillian Teeguarden* v. *A. G. Spalding & Bros., Inc.* Filed final judgment and order thereon dismissing complaint on the merits with prejudice. The claim of defendant for attorney's fees is dismissed with prejudice, entered Mar. 29, 1974.

3,127,293, A. J. Trenteseaux, METHOD OF PRODUCING UNWOVEN CLOTHS AND VELVETS AND APPARATUS USED THEREFOR, **filed** Apr. 5, 1974, D.C., N.D. Ga. (Rome), Doc. C 74–54–R, *Deering Milliken, Inc.* v. *Kemos, Inc.*

3,170,275, Rohdin and Rohdin, MEANS FOR HEAT SEALING LIDS ON BLISTERS, **filed** Apr. 5, 1974, D.C., S.D.N.Y., Doc. 74–C–1557 (LFM), *Diematic Manufacturing Corp.* v. *Packaging Industries, Inc.*

3,237,729, R. A. Proctor, INERTIA OPERATED MECHANISM, **filed** Mar. 29, 1974, D.C., E.D. Mich. (Detroit), Doc. 4–71364, *Britax (London) Limited* v. *General Safety Corporation.*

3,283,988, J. S. Hardigg, SHOCK ISOLATOR ELEMENT FOR CUSHIONED CONTAINER UNIT AND METHOD OF MAKING THE SAME, **filed** Mar. 15, 1974, Court of Claims (District of Columbia), Doc. 136–72, *James S. Hardigg* v. *The United States.* Order—judgment entered for plaintiff and against the United States, Mar. 22, 1974.

3,315,339, D. W. Young, TOOL FOR MOUNTING OR DEMOUNTING AUTOMOTIVE VALVE ASSEMBLIES, **filed** Aug. 18, 1972, D.C., N.D. Ohio (Cleveland), Doc. C72–871, *David M. Young* v. *Joseph J. Sosnoski et al.* Order, plaintiff's complaint and cross-complaints and/or counter-claims shall be dismissed with prejudice, plaintiff's cause of action is dismissed, Apr. 10, 1974.

3,316,294, Feighner and Kapur, DETERGENT ALKYLATE AND THE SULFONATE DERIVATIVE, **filed** July 6, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c1631, *Continental Oil Co.* v. *Union Carbide Corp.* Complaint and all counterclaims shall be dismissed with prejudice, Jan. 2, 1974.

3,325,018, L. A. Wright, ARTICULATING GAME, **filed** Dec. 7, 1970, D.C., W.D. Wash. (Seattle), Doc. 9371, *Star Iron & Steel Co. and International Terminal Co.* v. *Fruehauf Corporation.* Stipulation, dismissal filed Mar. 28, 1974.

3,417,753, M. Mattler, DISPOSABLE CATHETER AND METHOD FOR FORMING SAME, **filed** Aug. 11, 1972, D.C., E.D. Mich. (Detroit), Doc. 38743, *E-Z-EM Co.* v. *Multi-Med Industries, Inc. and Martin Mattler.* Order of dismissal—ordered action be dismissed without prejudice to the right of the plaintiff and cross plaintiff upon good cause shown, within sixty days, to move to vacate this order if settlement is not consummated, Mar. 29, 1974.

3,427,521, R. K. Lanman, DIE FINISHING MACHINE, **filed** Oct. 3, 1969, D.C., S.D. Calif. (San Diego), Doc. 69–289–K, *Armorlite Lens Co., Inc.* v. *Charles Douglas Campbell et al.* Stipulation for dismissal with prejudice, as to plaintiff, defendants and counterclaimants, Apr. 2, 1974.

3,570,748, Coyle and Marsella, COMPOSITE FILM AND METHOD, **filed** Nov. 29, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c3003, *Standard Packaging Corporation* v. *Curwood, Inc.* Defendant's motion for summary judgment on counterclaim granted in part and denied in part. Patent at issue held invalid. Defendant granted costs on counterclaim, action dismissed, Apr. 10, 1974.

3,613,044, W. G. Rarick, POWER SUPPLY CORD HATCH, **filed** Oct. 26, 1972, D.C., N.D. Ind. (South Bend), Doc. 72–S–217, *Lyall Electric, Inc.* v. *Glenn Morre and John Morre, doing business as Handyhome Products Co.* Consent judgment, in view of settlement agreement, no accounting is ordered and no damages are awarded to plaintiff, finds for plaintiff, against defendant, Mar. 20, 1974. **Same, filed** Sept. 24, 1973, D.C., N.D. Ind. (South Bend), Doc. 73–S–191, *Lyall Electric, Inc.* v. *Bender Wholesale Distributors, Inc.* Consent judgment, no accounting is ordered and no damages are awarded to plaintiff, finds for plaintiff and against defendant, Mar. 20, 1974.

3,720,872, Russell and Gracie, POWER TRANSMISSION FAULT INDICATOR WITH AUTOMATIC RESET MEANS, **filed** Mar. 29, 1974, D.C.N.J. (Trenton), Doc. C–74–447, *Burndy Corporation et al.* v. *Edison Control Corp. et al.*

Re. 27,111, R. E. Wilson, PITCH-BONDED REFRACTORY COMPOSITION, **filed** Feb. 15, 1974, D.C., W.D. Pa. (Pittsburgh), Doc. 74–157, *Basic Incorporated* v. *H. K. Porter Company, Incorporated.*

3,639,922, Samuels and Samuels, CUSHIONED TOILET SEAT, **filed** Dec. 6, 1973, D.C., E.D. Pa. (Philadelphia), Doc. C.A. 73–2770, *Ginsey Industries, Inc.* v. *Stanley J. Samuels and Samuel Samuels.*

3,678,942, Abbott and Chen, METHOD OF MAKING PRECUT AND PRESET WIG AND PRECUT AND PRESET WIG, **filed** Feb. 28, 1974, D.C., C.D. Calif. (Los Angeles) Doc. 74–541–WMB, *Brentwood Industries, Inc. and Harry Camp Co.* v. *Clairol Inc., Abbott Tresses and Godfrey Chen.*

3,691,727, F. Doerschein, MULTIPLE SHEET DISPENSING APPARATUS, **filed** June 12, 1973, D.C., N.D. Ohio (Cleveland), Doc. C–73–596, *Heat Sealing Equip. Mfg. Co.* v. *Franklin Electric Co., Inc. et al.* **Same, Filed** June 12, 1973, D.C., N.D. Ohio (Cleveland), Doc. C–73–597, *Heat Sealing Equipment Manufacturing Co.* v. *Cleveland-Detroit Corp. and Clamco Corp.* Consent judgment—plaintiff owner of patent, defendants hereby enjoined from further infringement, Count II of amended complaint dismissed with prejudice, Jan. 8, 1974.

3,692,354, R. P. Tuerk, TRUCK STAKE ARRANGEMENT, **filed** Mar. 1, 1974, D.C., M.D.N.C. (Greensboro), Doc. C–74–68–WS, *Robert P. Tuerk* v. *Charles Jarrell.*

3,694,993, J. L. East, AUTOMATIC BOTTLE PACKING METHOD AND APPARATUS, **filed** Mar. 8, 1974, D.C. Va. (Lynchburg), Doc. 74–17, *Simplimatic Engineering Company* v. *Alliance Industrial Corporation.*

3,702,701, Vaughn and Hargrave, METAL TENNIS RACKET WITH PLASTIC THROAT PIECE AND MOLDED PLASTIC HANDLE, **filed** Mar. 12, 1974, D.C.N.J. (Trenton), Doc. C–74–351, *Maark Corporation* v. *Herman's World of Sporting Goods, etc.*

3,716,871, A. G. Borse, DISPOSABLE URINAL, **filed** Aug. 14, 1973, D.C. Mich. (Kalamazoo), Doc. K107–73CA 4, *Borse Plastic Products Corporation* v. *A & G Plastic Products, Inc.*

3,721,584, A. R. Diem, SILICON COATED SUBSTRATES AND OBJECTS FABRICATED THEREFROM, **filed** Mar. 20, 1974, D.C. Utah (Salt Lake City), Doc. C–74–94, *Trans-Sil Products, Inc.* v. *Martek, Inc.*

3,722,817, A. B. Fletcher, SPRAYER, **filed** Apr. 13, 1973, D.C., W.D. Okla. (Oklahoma City), Doc. 73–255–C, *F and F Manufacturing, Inc.* v. *Dixon Distributors, Inc.* Plaintiff's complaint and defendant's counterclaim dismissed without prejudice, Nov. 13, 1973.

3,727,321, Waters and Liedtke, PORTABLE HAIR DRYER, **filed** May 10, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c1203, *Sunbeam Corporation* v. *Gillette Company.*

3,729,763, R. M. Coley, WHEEL WASHING APPARATUS, **filed** Mar. 11, 1974, D.C., M.D.N.C. (Greensboro), Doc. C–74–74–G, *Vend-A-Matic, Inc.* v. *MacCleens Inc.*

3,755,824, A. J. Sperling, METHOD FOR AVOIDING THE APPEARANCE OF BALDNESS, **filed** Jan. 3, 1974, D.C., E.D.N.Y. (Brooklyn), Doc. 74C13, *Plus Hair Centers International, Inc.* v. *Executive Hair-Weave Center, Inc.*

3,756,008, G. F. Smith, SELF-COILING WIRE CABLE AND METHOD OF FORMING SAME, **filed** Nov. 1, 1973, D.C., C.D. Calif. (Los Angeles), Doc. 73–2554–RJK, *Helistrand, Inc.* v. *Investment Molding Corp., doing business as C & C Cycle Accessories.*

3,756,939, S. Hurwitt, TARGET MOUNTING DEVICE FOR SEQUENTIAL SPUTTERING, **filed** Mar. 15, 1974, D.C. Del. (Wilmington), Doc. 74–50, *Materials Research Corporation* v. *Perkin-Elmer Ultek Inc.*

3,766,374, S. Fairchild, DECORATIVE STRUCTURE, **filed** Feb. 1, 1974, D.C., C.D. Calif. (Los Angeles), Doc. CV–74–271 AAH, *Poly-Optics, Inc.* v. *International Fiber Optics, S.M.I.L.E. Corporation and Richard Stivers.*

Re. 27,545, W. R. Guy, RANGE OPEN DOOR LATCHING DEVICE, **filed** Dec. 10, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c3109, *Kelvinator, Inc.* v. *Roper Corporation.* Action dismissed with prejudice, Mar. 20, 1974.

D. 212,602, R. A. Gera, SECTIONAL SOFA, **filed** Mar. 12, 1974, U.S. Court of Appeals, W.D. Tenn. (Memphis), Doc. 73–1470, *Schradig Corporation* v. *Gaines Manufacturing Co., Inc.* Patent valid and infringed, judgment of the District Court is affirmed, Mar. 12, 1974.

Certificates of Correction for the Week of Sept. 10, 1974

Re. 27,843	3,769,659	3,789,657	3,796,515	3,800,872	3,803,107	3,805,417	3,807,736
Re. 27,890	3,770,370	3,789,992	3,796,668	3,800,961	3,803,177	3,805,421	3,807,998
3,305,189	3,770,555	3,790,301	3,796,760	3,800,965	3,803,189	3,805,450	3,808,011
3,564,513	3,771,359	3,790,311	3,796,785	3,801,110	3,803,191	3,805,451	3,808,062
3,594,965	3,772,219	3,790,329	3,796,913	3,801,244	3,803,192	3,805,473	3,808,073
3,607,189	3,772,894	3,790,439	3,797,091	3,801,298	3,803,247	3,805,486	3,808,146
3,615,207	3,773,887	3,790,620	3,797,314	3,801,391	3,803,266	3,805,546	3,808,199
3,619,277	3,773,902	3,790,792	3,797,328	3,801,428	3,803,303	3,805,561	3,808,239
3,637,808	3,774,053	3,790,852	3,797,339	3,801,490	3,803,468	3,805,577	3,808,300
3,647,802	3,774,323	3,790,884	3,797,405	3,801,524	3,803,471	3,805,587	3,808,322
3,663,604	3,774,887	3,791,045	3,797,635	3,801,543	3,803,515	3,805,591	3,808,326
3,682,608	3,774,970	3,791,938	3,797,668	3,801,584	3,803,517	3,805,806	3,808,335
3,683,996	3,775,838	3,792,002	3,797,697	3,801,585	3,803,556	3,805,807	3,808,379
3,687,957	3,776,419	3,792,236	3,797,771	3,801,636	3,803,592	3,805,902	3,808,498
3,705,021	3,777,086	3,792,267	3,797,791	3,801,642	3,803,599	3,805,971	3,808,582
3,717,651	3,777,249	3,792,299	3,797,892	3,801,661	3,803,603	3,805,984	3,808,590
3,720,264	3,777,363	3,792,452	3,798,122	3,801,676	3,803,672	3,806,079	3,808,671
3,729,958	3,778,502	3,792,908	3,798,182	3,801,677	3,803,701	3,806,090	3,808,690
3,732,014	3,778,514	3,792,968	3,798,436	3,801,726	3,803,856	3,806,099	3,808,914
3,732,127	3,778,606	3,793,038	3,798,541	3,801,746	3,803,863	3,806,104	3,808,981
3,732,527	3,779,156	3,793,249	3,798,654	3,801,758	3,804,012	3,806,139	3,809,072
3,738,732	3,779,691	3,793,328	3,798,685	3,801,764	3,804,081	3,806,218	3,809,086
3,742,153	3,779,719	3,793,611	3,798,875	3,801,833	3,804,158	3,806,234	3,809,125
3,743,858	3,779,725	3,793,834	3,799,125	3,801,857	3,804,199	3,806,263	3,809,207
3,744,893	3,779,946	3,793,899	3,799,262	3,801,896	3,804,283	3,806,266	3,809,211
3,747,829	3,779,989	3,793,964	3,799,342	3,801,900	3,804,424	3,806,294	3,809,288
3,749,759	3,780,374	3,793,986	3,799,468	3,801,906	3,804,653	3,806,334	3,809,314
3,751,170	3,782,394	3,794,117	3,799,526	3,801,907	3,804,748	3,806,431	3,809,333
3,751,895	3,782,651	3,794,272	3,799,586	3,801,911	3,804,822	3,806,451	3,809,398
3,752,666	3,783,220	3,794,356	3,799,642	3,801,917	3,804,826	3,806,463	3,809,436
3,753,993	3,783,336	3,794,459	3,799,720	3,801,928	3,804,866	3,806,483	3,809,522
3,755,211	3,783,670	3,794,498	3,799,752	3,801,985	3,804,871	3,806,810	3,809,604
3,756,775	3,783,937	3,794,608	3,799,873	3,802,087	3,804,894	3,806,823	3,809,692
3,757,551	3,784,030	3,794,680	3,799,890	3,802,373	3,804,919	3,806,842	3,809,780
3,758,674	3,784,502	3,794,721	3,800,025	3,802,376	3,804,927	3,806,887	3,809,830
3,758,745	3,784,635	3,794,756	3,800,039	3,802,437	3,804,935	3,807,117	3,809,854
3,759,711	3,785,558	3,794,844	3,800,120	3,802,508	3,804,937	3,807,150	3,809,973
3,759,748	3,787,542	3,794,847	3,800,161	3,802,577	3,804,955	3,807,182	3,810,391
3,759,935	3,787,552	3,794,886	3,800,231	3,802,616	3,804,974	3,807,238	3,810,451
3,760,035	3,787,577	3,794,920	3,800,242	3,802,627	3,805,045	3,807,242	3,810,937
3,761,513	3,788,496	3,794,935	3,800,401	3,802,757	3,805,061	3,807,377	3,811,057
3,761,592	3,788,544	3,795,234	3,800,403	3,802,841	3,805,128	3,807,402	3,811,063
3,762,830	3,788,726	3,795,268	3,800,473	3,802,852	3,805,143	3,807,458	3,811,275
3,763,156	3,788,902	3,795,306	3,800,553	3,802,886	3,805,178	3,807,467	3,811,609
3,763,692	3,789,004	3,795,516	3,800,600	3,802,915	3,805,209	3,807,518	3,825,419
3,764,365	3,789,040	3,795,557	3,800,619	3,802,980	3,805,221	3,807,546	
3,764,636	3,789,084	3,795,851	3,800,709	3,803,013	3,805,334	3,807,548	
3,768,039	3,789,206	3,795,872	3,800,718	3,803,069	3,805,392	3,807,592	
3,769,470	3,789,272	3,796,437	3,800,729	3,805,096	3,805,410	3,807,633	

National Technical Information Service

GOVERNMENT-OWNED INVENTIONS

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Paper copies of patents cannot be purchased from NTIS but are available from the Commissioner of Patents, Washington, D.C. 20231, at $0.50 each.

Requests for licensing information should be directed to the address cited below for each agency.

DOUGLAS J. CAMPION,
Patent Program Coordinator, National Technical Information Service.

U.S. ATOMIC ENERGY COMMISSION
Assistant General Counsel for Patents,
Washington, D.C. 20545

Patent application 350,860. Automated Sample-Reagent Loader. Filed Apr. 13, 1973. PC $4/MF $1.45.

Patent application 357,758. Diagnoses of Disease States by Fluorescent Measurements Utilizing Scanning Laser Beams. Filed May 7, 1973. PC $4/MF $1.45.

Patent application 363,221. Pulsed Multiline CO_2 Laser Oscillator Apparatus and Method. Filed May 23, 1973. PC $4/MF $1.45.

Patent application 364,397. Telecommunication Using Muon Beams. Filed May 29, 1973. PC $4/MF $1.45.

Patent application 367,657. Method of Diagnosing a Disease Utilizing Enzyme-Labeled Anti-Bodies. Filed June 6, 1973. PC $4/MF $1.45.

Patent application 367,680. Low Density Syntactic Foams. Filed June 6, 1973. PC $4/MF $1.45.

Patent application 367,683. Doppler-Shift Velocity Measurement System Using a Two-Frequency Laser. Filed June 6, 1973. PC $4/MF $1.45.

Patent 3,764,466. Production of Plasmas by Long-Wavelength Lasers. Filed Apr. 1, 1971. Patented Oct. 9, 1973. Not available NTIS.

Patent 3,764,467. Fast Breeder Reactor Protection System. Filed Dec. 22, 1971. Patented Oct. 9, 1973. Not available NTIS.

Patent 3,764,552. Method for Storing Radioactive Combustible Waste. Filed June 14, 1972. Patented Oct. 9, 1973. Not available NTIS.

Patent 3,764,553. Removal of Radioisotopes From Waste Solutions. Filed Aug. 18, 1972. Patented Oct. 9, 1973. Not available NTIS.

Patent 3,766,526. Multi-Microprogrammed Input-Output Processor. Filed Oct. 10, 1972. Patented Oct. 16, 1973. Not available NTIS.

Patent 3,767,929. Method and Means for Measuring the Anisotropy of a Plasma in a Magnetic Field. Filed June 15, 1972. Patented Oct. 23, 1973. Not available NTIS.

DEPARTMENT OF THE AIR FORCE
AF/JACP, Washington, D.C. 20314

Patent application 404,060. Quick Release Open Link. Filed Nov. 5, 1973. PC $4.50/MF $1.45.

Patent application 404,083. Sliding Segment Roller. Filed Oct. 5, 1973. PC $4/MF $1.45.

Patent application 404,091. The Chemical Protection of Asbestos. Filed Oct. 5, 1973. PC $4/MF $1.45.

Patent application 405,620. Apparatus for Laser Frequency Selection. Filed Oct. 11, 1973. PC $4/MF $1.45.

Patent application 405,722. Gauge Installation Tool. Filed Oct. 11, 1973. PC $4/MF $1.45.

Patent application 407,357. Base Two Exponential Counter. Filed Oct. 17, 1973. PC $4/MF $1.45.

Patent application 407,379. Ceramic Ductile Metal Composites. Filed Oct. 17, 1973. PC $4/MF $1.45.

U.S. DEPARTMENT OF AGRICULTURE
Chief, Research Agreements and Patent Mgmt. Branch, Federal Building, General Services Division, Agricultural Research Service, Hyattsville, Md. 20782

Patent application 176,620. Improved, Easily Folding Strip Chart Records. Filed Aug. 20, 1973. PC $4/MF $1.45.

Patent application 278,661. Process for Reducing the Hygroscopicity of Dehydrated Fruits. Filed Aug. 7, 1972. PC $4/MF $1.45.

Patent application 288,839. Stable Acidified Concentrated Milk Products and Methods of Preparation. Filed Sept. 13, 1972. PC $4/MF $1.45.

Patent application 323,194. Process for the Preparation of Beta Keto Aldehydes. Filed Jan. 12, 1973. PC $4/MF $1.45.

Patent application 335,859. Preparation of Enol Esters. Filed Feb. 26, 1973. PC $4/MF $1.45.

Patent application 337,789. Physiochemically Designed Fat Compositions From Tallow and Process for Making. Filed Mar. 5, 1973. PC $4/MF $1.45.

Patent application 343,328. Method and Compounds for Disrupting Normal Insect Maturation. Filed Mar. 21, 1973. PC $4/MF $1.45.

Patent application 348,554. 2-Hydroperoxycarboxylic Acids and Their Preparation. Filed Apr. 6, 1973. PC $4/MF $1.45.

Patent application 360,279. Methods of Increasing the Attraction of the Gypsy Moth, Porthetria Dispar L. Filed May 16, 1973. PC $4/MF $1.45.

Patent application 365,898. A method of Inhibiting the Formation of Nitrosamines in Cured Meat Products. Filed June 1, 1973. PC $4/MF $1.45.

Patent application 370,094. Doctoring Apparatus. Filed June 14, 1973. PC $4/MF $1.45.

Patent 3,692,532. Milk-Fruit Juice Beverage and Process for Preparing Same. Filed Oct. 27, 1970. Patented Sept. 19, 1972. Not available NTIS.

Patent 3,716,592. Process for the Preparation of Alkyl, Perfluoroalkyl and Aryl Iodides. Filed Nov. 12, 1971. Patented Feb. 13, 1973. Not available NTIS.

Patent 3,748,149. Continuous Production of Cheese Curd. Filed Feb. 14, 1972. Patented July 24, 1973. Not available NTIS.

Patent 3,749,669. Lubricants for Hides and Leather. Filed June 21, 1971. Patented July 31, 1973. Not available NTIS.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Assistant General Counsel for Patent Matters, NASA—Code GP–2, Washington, D.C. 20546

Patent 3,763,708. Cryogenic Gyroscope Housing. Patented Oct. 9, 1973. Not available NTIS.

Patent 3,788,163. Manual Actuator. Patented Jan. 29, 1974. Not available NTIS.

Patent 3,789,654. Method for Determining Thermo-Physical Properties of Specimens. Patented Feb. 5, 1974. Not available NTIS.

Patent 3,790,037. Metering Gun for Dispensing Precisely Measured Charges of Fluid. Patented Feb. 5, 1974. Not available NTIS.

Patent 3,790,347. Apparatus for Remote Handling of Materials. Patented Feb. 5, 1974. Not available NTIS.

Patent 3,790,650. Method for Compression Molding of Thermosetting Plastics Utilizing a Temperature Gradient Across the Plastic To Cure the Article. Patented Feb. 5, 1974. Not available NTIS.

Patent 3,795,448. Doppler Shift System. Patented Mar. 5, 1974. Not available NTIS.

Errata

All reference to Patent No. 3,815,544 to Alvin A. Rood, Edwin F. Hogstrom and William C. Stumphauzer for Apparatus for Striping Inside Seams of Cans, appearing in the OFFICIAL GAZETTE of June 11, 1974, should be deleted as the aforementioned patent is a duplication of Patent No. 3,702,107.

All reference to Patent No. 3,829,416 to Michael J. Green of Orange, N.J. and Satish C. Bisarya of Moradabad, India for Process for the Manufacture of 3-Keto-6-Azido-4,6-Bis-Dehydro-Steroids and Intermediates Useful Therein appearing in the OFFICIAL GAZETTE of August 13, 1974, should be deleted since the patent was not granted.

PATENT EXAMINING CORPS

WILLIAM FELDMAN, Acting Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF AUGUST 17, 1974

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	10-9-73
GENERAL ORGANIC CHEMISTRY, GROUP 120—R. F. BURNETT, Acting Director. Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	7-12-73
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	11-16-73
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. L. LEAVITT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	9-18-73
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	8-27-73
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARSON, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	1-9-74
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	3-1-73
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	11-2-73
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—N. ANSHER, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food: Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	7-2-73
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	12-13-73
DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	3-16-73
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—G. M. FORLENZA, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	9-10-73
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	10-29-73
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. PULFREY, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	11-2-73
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GAY, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	11-9-73
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	12-3-73

Expiration of patents: The patents within the range of numbers indicated below expire during September 1974, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,804,620 to 2,807,803, inclusive
Plant Patents..... Numbers 1,638 to 1,645, inclusive

REISSUES

SEPTEMBER 10, 1974

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

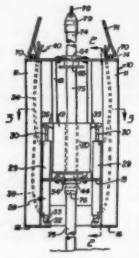
28,151
TUBE DRIVING APPARATUS

Paul M. Cook, 835 W. 7th Ave., Vancouver, British Columbia, Canada

Original No. 3,474,870, dated Oct. 28, 1969, Ser. No. 691,464, Dec. 18, 1967. Application for reissue Oct. 26, 1971, Ser. No. 192,269

Int. Cl. B25d *9/04, 11/04, 13/00*

U.S. Cl. 173—91 14 Claims



An apparatus having a frame in which a tubular ram is mounted to be reciprocated into driving engagement with a laterally projecting part of a driven member extending coaxially through the ram.

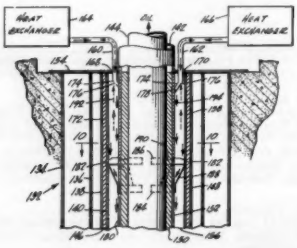
28,152
OIL WELL PERMAFROST STABILIZATION SYSTEM

Elmer D. Waters, Richland, Wash., assignor to McDonnell Douglas Corporation

Original No. 3,749,163, dated July 31, 1973, Ser. No. 72,715, Sept. 16, 1970. Application for reissue Dec. 20, 1973, Ser. No. 426,809

Int. Cl. E21b *43/00, 43/24*

U.S. Cl. 166—57 25 Claims



Oil well casing construction for installation in permafrost to convey hot oil and simultaneously provide for permafrost stabilization. The oil well permafrost stabilization system normally includes an insulated heat gathering surface member or shield positioned around an upper predetermined length of production casing carrying hot oil through permafrost, passively actuated heat transfer tubes closed at their lower ends and thermally coupled to the heat gathering shield along its length, and a heat exchanger connected to the upper ends of the heat transfer tubes for rejecting the heat transferred thereto whereby heat from the hot oil carried by the production casing is prevented from melting the adjacent permafrost.

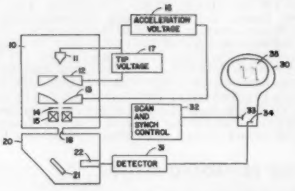
28,153
FIELD EMISSION SCANNING MICROSCOPE DISPLAY

Vincent J. Coates, Los Altos, and Leonard M. Welter, Saratoga, Calif., assignors to American Optical Corporation, Framingham, Mass.

Original No. 3,767,926, dated Oct. 23, 1973, Ser. No. 251,125, May 8, 1972. Application for reissue Oct. 24, 1973, Ser. No. 409,124

Int. Cl. H01j *37/26*

U.S. Cl. 250—311 7 Claims



A field emission scanning microscope display system wherein a field emission gun generates a beam of charged particles which impinge upon a specimen to be investigated. A detector of the scintillation type produces an image signal relative to the impingement of the beam on the specimen. The image signal is appropriately amplified and conducted to a signal grid of a television type viewing monitor. A control unit synchronously deflects the microscope beam and the electron beam of the viewing tube in a predetermined pattern. The pattern is selected to have preferably a four-to-one interlacing and the interlacing sequence is selected so as to render the image formed on the viewing tube substantially stationary in a normal viewing mode.

28,154
WALL OR DUCT MOUNTED HUMIDISTAT

Walter R. Stiles, Milford, Mich., assignor to Skuttle Manufacturing Company, Milford, Mich.

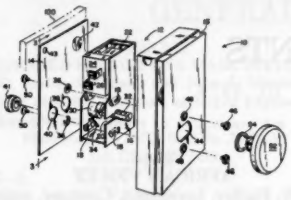
Original No. 3,523,217, dated Aug. 4, 1970, Ser. No. 735,854, June 10, 1968. Application for reissue Aug. 25, 1972, Ser. No. 283,860, which is a reissue continuation of abandoned application Ser. No. 123,799, Mar. 12, 1971

Int. Cl. H02b *1/10*

U.S. Cl. 317—120 8 Claims

A humidity control device including a substantially flat base plate and a humidity sensing assembly which may be removably mounted in either forward or reverse positions on the base plate to adapt the control device for use either as a wall mounted or duct mounted humidistat. The base plate has an opening through which and adjusting shaft on the humidity sensing assembly may pass when the device is assembled in an air duct mounting position. In addition, the plate has a plurality

of readily removable knock-out plugs with one or another of the plugs being located on the plate to be respectively positioned adjacent electrical terminals on the sensing assembly when it is in either a forward or reverse position. A number of bosses extend from the plate and function to space the sensing assembly therefrom when the parts are assembled as a duct humidistat.



28,155

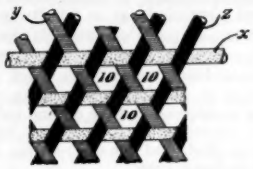
TRIAXIAL FABRIC

Norris F. Dow, Radnor, Pa., assignor to Doweave, Inc.

Original No. 3,446,251, dated May 27, 1969, Ser. No. 725,585, Apr. 23, 1968, which is a continuation-in-part of abandoned application Ser. No. 515,028, Dec. 20, 1965. Application for reissue June 18, 1973, Ser. No. 370,946

Int. Cl. D03d *13/00*

U.S. Cl. 139—383 R **23 Claims**



Fabrics of this invention comprise three angularly displaced sets of parallel courses of yarn, interwoven to prevent slippage of at least one yarn course set along any other yarn course set. The interweaving may be such as to prevent slippage of all three yarn course sets. Each yarn course may comprise one or more individual strands of yarn. Fabrics woven in this manner are substantially isotropic, i.e. their strength and resistance to stretching or shearing forces in a plane of the fabric is relatively constant regardless of the direction of force application.

28,156

PHOTOCONDUCTIVE TARGET WITH N-TYPE LAYER OF CADMIUM SELENIDE INCLUDING CADMIUM CHLORIDE AND CUPROUS CHLORIDE

Yuji Kiuchi and Kazuo Shimizu, Yokohama, and Okio Yoshida, Kawasaki, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

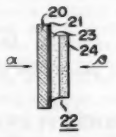
Original No. 3,571,646, dated Mar. 23, 1971, Ser. No. 744,743, July 15, 1968. Application for reissue Mar. 21, 1973, Ser. No. 343,489

Claims priority, application Japan, July 17, 1967, 42/45,640

Int. Cl. H01j *31/28, 39/06, 39/18*

U.S. Cl. 313—94 **3 Claims**

This photoconductive target comprises a photoconductive member consisting of two layers: a first layer 0.5 micron minimum thick formed on a transparent electrode and a second layer 0.6 micron maximum thick superposed on the first layer so as to be disposed on the side electron gun. The first layer is solely or mainly made of cadmium selenide, and the second layer is formed from a high resistance semiconductor material.



28,157

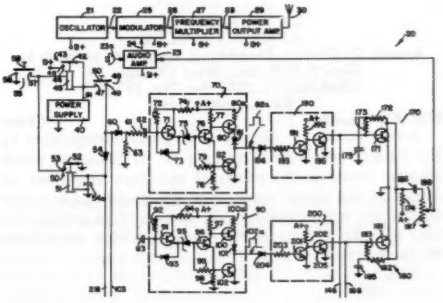
TRANSMITTER WITH MEANS FOR GENERATING THE CARRIER WAVE BEFORE GENERATING THE MODULATION COMPONENTS

Keith H. Wycoff, P.O. Box 308, Lexington, Nebr. 68850

Original No. 3,619,784, dated Nov. 9, 1971, Ser. No. 16,037, Mar. 3, 1970. Application for reissue Jan. 31, 1972, Ser. No. 222,390

Int. Cl. H04b *1/02*

U.S. Cl. 325—155 **19 Claims**



There is disclosed an electronic switching device having a transmitter-energized position for coupling a source of operating voltage to a carrier-wave-generating circuit, a further switch coupled to the electronic switch having one position causing the electronic switch to be placed in its transmitter-energized position, a control circuit which provides energizing signals when the further switch is placed in its first position and then in its second position, which energizing signals cause a circuit to generate information for modulation on the carrier wave, a holding circuit which, in the presence of the energizing signals, maintains the energizing switch closed despite placement of the further switch in its second portion.

PLANT PATENTS

GRANTED SEPTEMBER 10, 1974

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,611
VIOLET PLANT

Arnold W. Fischer, Isernhagen, Germany, assignor to Geo. J. Ball, Inc., West Chicago, Ill.

Filed May 3, 1973, Ser. No. 356,926
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—69 **1 Claim**

A new variety of African violet plant distinguished by the unique deep violet color of its blossoms which bloom profusely and form clusters of large long-lasting flowers; and by its vigorous growth, early flowering habit, and its tolerance for environmental changes.

3,612
AFRICAN VIOLET

Arnold W. Fischer, Isernhagen, Germany, assignor to Geo. J. Ball, Inc., West Chicago, Ill.

Filed May 3, 1973, Ser. No. 357,075
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—69 **1 Claim**

A new variety of African violet plant having a very light blue flower coloring, the new plant being of the compact potted plant type in which the flowers are borne upright, converging toward the center to form a dense canopy of long lasting blooms which are borne in clusters on each peduncle.

3,613
AFRICAN VIOLET

Arnold W. Fischer, Isernhagen, Germany, assignor to Geo. J. Ball, Inc., West Chicago, Ill.

Filed May 3, 1973, Ser. No. 357,076
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—69 **1 Claim**

A new variety of African violet plant distinguished by the unique purple-pink coloring of its blossoms which tend to cluster at the center of the plant to present an attractive and showy appearance, the bright flower colors contrasting with a surrounding display of abundant foliage, and the flowers appearing high above the foliage on sturdy upright stems.

3,614
AFRICAN VIOLET

Arnold W. Fischer, Isernhagen, Germany, assignor to Geo. J. Ball, Inc., West Chicago, Ill.

Filed May 3, 1973, Ser. No. 357,077
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—69 **1 Claim**

A distinct and new variety of African violet plant distinguished by its large upstanding flowers of intense blue color, with petals having wavy and frilled margins, which form a distinctive cluster at the center of the plant rising above a generally horizontal and rotate spread of large leaves having relatively long petioles.

3,615
ROSE PLANT

J. Benjamin Williams, Silver Spring, Md., assignor to The Conard-Pyle Company, West Grove, Pa.

Filed May 7, 1973, Ser. No. 358,105
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—6 **1 Claim**

1. A new and distinct variety of rose plant of the climber class, substantially as herein shown and described, characterized particularly as to novelty by its vigorous habit of growth, its good hardiness, its abundant and attractive foliage, its very good remontance, its habit of producing a cluster bloom on each new shoot, the very good form and size of its blooms, the strong and appealing fragrance of its blooms, and the general color tonality of the flowers corresponding to Carmine, lightly overcast with Oxblood Red, and the long-lasting and unfading qualities of the flower color.

3,616
CHRYSANTHEMUM PLANT

Barrie John Machin, Chichester, England, assignor to Frampton's Nurseries Limited, Sussex, England

Filed May 29, 1973, Ser. No. 364,489
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—78 **1 Claim**

1. A new and distinct variety of *Chrysanthemum morifolium* Bailey (spray type) substantially as herein shown and described.

PATENTS

GRANTED SEPTEMBER 10, 1974

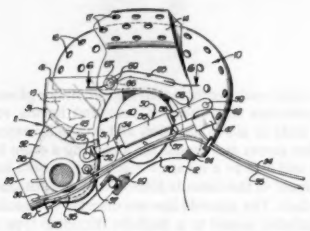
GENERAL AND MECHANICAL

3,833,935

INTEGRATED HELMET AND MASK STRUCTURE

William K. Ansite, Glendale, and John J. Mitchell, Jr., Arcadia, both of Calif., assignors to Sierra Engineering Company, Sierra Madre, Calif.

Filed May 22, 1972, Ser. No. 255,838
Int. Cl. A62b *7/00*
U.S. Cl. 2—6 **9 Claims**



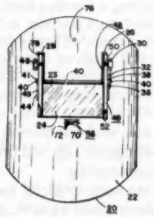
For flying personnel there is provided a hard shell helmet suitably padded and held out of close contact with the head. An integrated visor assembly has an articulated attachment to the helmet movable between an operative position over the wearer's face and a lifted position extending over the top of the helmet removed from the face. Compound leverage elements making up the attachment determine a path of movement for the visor assembly such that it travels an irregular path allowing it to first lift clear of contact with the face and then travel upwardly to its lifted position. An inflatable seal extends around the perimeter of the visor assembly, the seal being inflated with air from the oxygen supply for the breathing mask when in operation over the face of the wearer and being collapsed when deflated providing additional clearance for ease of removal from the face and for storage in its lifted position.

3,833,936

WELDER'S MASK

Roberto C. LoGuidice, 12525 N.W. 21 Pl., Miami, Fla. 33167

Filed Jan. 5, 1973, Ser. No. 321,433
Int. Cl. A61f *9/06*
U.S. Cl. 2—8 **4 Claims**



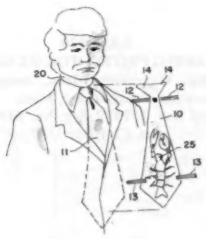
An optically protective viewing glass is slidably mounted in slides vertically fixed at the sides of a viewing slot in a face shield. The viewing glass is driven between opposite work performing and work viewing positions by a motor and synchronized side gear trains to prevent jamming of the glass in the slides. The motor is mounted on the face shield and energized from a power source, similarly mounted, through circuit means having two parallel branches, one branch for energizing the motor to drive the viewing glass to one of its opposite positions, and the other branch to the other of its opposite positions. Limiting switches, respectively connected in the parallel branches and mounted on the face shield at the respective opposite positions of the viewing glass, are operable by the viewing glass reaching either of said positions to open the limit switch in the parallel branch energized to drive said glass to the position just reached and simultaneously to close the limit switch in the other parallel branch. An energizing switch is mounted on the face shield and connected in both branch circuits to alternately close the circuit of one of said parallel branches and open the other as it is mouth-operated by a welder. The limiting and energizing switches are coordinated to alternately drive the viewing glass to opposite positions each time the energizing switch is operated.

3,833,937

NAPKIN FOR TIES

Kendrick Taylor, San Jose, Calif., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Mar. 16, 1973, Ser. No. 342,036
Int. Cl. A41d *27/12*
U.S. Cl. 2—46 **1 Claim**



An attachable protective napkin for a man's tie which may be readily fastened so as to protect the tie when being worn while eating from the splatter of food or other liquids. The device is a shaped section of laminated absorbent and waterproof paper or plastic sheeting. One end of the tie napkin is triangular shaped, so as to tuck about the tie and under the collar of the wearer, with the napkin shaped to the general outline of a man's tie and of slightly larger dimension and fitted with flexible semi-rigid tie members that bend about the protected tie so as to retain the napkin in position.

3,833,938

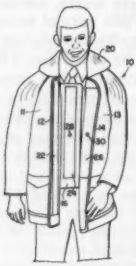
TURNOUT COAT

John David Shweid, San Francisco, Calif., assignor to John Morris Company, Inc., San Francisco, Calif.

Filed Aug. 10, 1973, Ser. No. 387,576
Int. Cl. A44b *19/32*
U.S. Cl. 2—96 **8 Claims**

An efficient and effective means for connecting and sealing the front trunk and collar portions of a turnout coat is disclosed. One side of the coat front fits between two parallel flaps which form the other side of the coat front. Strips of en-

gageable fastening material are provided on the confronting surfaces of the overlapping portions of the coat front so that the coat can easily be closed and opened, even in emergency situations. A wide tab is provided which interconnects the frontal halves of the collar to maintain the collar in the raised position. The collar has vertically extended side portions



which cover the ears of the wearer and a depressed rear portion to conform the collar to the underside of a helmet. When the turnout coat is worn with tranditional protective equipment, the combination of the front flaps, tab and raised collar fully protect the wearer from exposure. An improved sleeve design is also disclosed to allow freedom of movement for the wearer even when the turnout coat is fully closed.

3,833,939

HEARING PROTECTOR HEADSET

Harry Dostourian, Worcester, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Filed Nov. 3, 1972, Ser. No. 303,452

Int. Cl. H04r *1/10*

U.S. Cl. 2—209 **9 Claims**

An improved circum-aural headset in which a headband is movably attached to an ear enclosure housing. The ear enclosure is adapted to be in substantially air-tight resilient contact with the region of the head about the ear. A shaft is attached to and projects axially of the ear enclosure housing and one end of the headband having an elongated over-sized complementary slot is engaged to the shaft. A pair of resilient members are each mounted on the shaft on either side of the headband. The enclosure housing is provided with adequate access to the shaft for engaging the headband and the resilient members to the shaft. A threaded member is provided for securing the headband and the resilient members to the shaft and for applying a predetermined compressive force to the resilient members. The combined action of the over-sized headband slot and the resiliently applied force permits limited universal motion between the headband and the ear enclosure housing.

3,833,940

BILE DUCT ENDOPROTHESIS

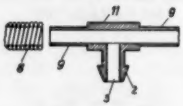
Walter Hartenbach, Schwalbacher Str., 62 Wiesbaden, Germany

Filed Oct. 16, 1972, Ser. No. 297,746

Claims priority, application Germany, Nov. 17, 1971, 2156994

Int. Cl. A61f *1/24*; A61m *27/00*

U.S. Cl. 3—1 **8 Claims**



A bile duct endoprothesis having a metal or plastic cannula for introduction into the bile duct and having rounded or beveled ends to aid in insertion and a radially extending portion which serves as a means for attaching a drain hose to the cannula and also as a means for insuring against longitudinal displacement of the cannula after it has been positioned within the bile duct. The cannula has two discrete end sections which are detachable joined to a push on frictional type connector that enables easier implantation of the cannula within a bile duct.

3,833,941

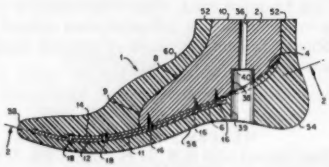
MOLDED SACH FOOT

Eugene Wagner, Wagner's Orthopedic Supply Company, 375 W. 4th South St., Salt Lake City, Utah 84110

Filed Feb. 28, 1973, Ser. No. 336,507

Int. Cl. A61f *1/08*

U.S. Cl. 3—7 **15 Claims**



An artificial foot having a wooden keel in the ankle portion which has a diminished heel portion, a flat arch portion, a curved instep portion, a rounded lower front end portion and a flat top; a molded soft resilient foam coating on said keel which has heel and toe portions; and a reinforcing member comprising a highly resilient synthetic resin (preferably nylon) strip secured at its rear end to said flat arch portion and its front end extending into said toe portion to give it predetermined flexibility. Coatings on exposed broad surfaces of said strip bond it to said foam coating.

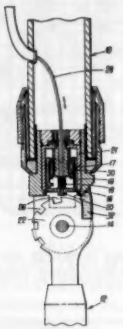
A method of making such artificial feet, particularly with keel portions of predetermined variable density and toe portions of predetermined flexibility, by fashioning the keel with its heel portion properly diminished for the predetermined heel density, preparing the reinforcing strip to provide the predetermined toe flexibility by choice of composition gauge, length and number of highly resilient synthetic resin (preferably at least one nylon) strips, securing it properly to the keel and molding the soft synthetic resin foam on and bonding it to said keel and reinforcing member.

3,833,942

PIVOTED ARTIFICIAL LIMB WITH SPRING LOADED JOINT LOCK

Dennis William Collins, Kingston-upon-Thames, England, assignor to Hugh Steeper (Roehampton) Limited, London, England

Filed Jan. 19, 1973, Ser. No. 325,155
Int. Cl. A61f 1/06, 1/04, 1/08
U.S. Cl. 3—12.3 8 Claims



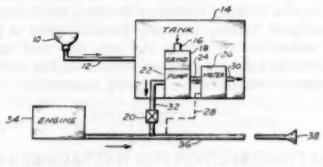
An artificial arm or leg comprising a pair of rigid tubular limb members which are pivotally connected together at adjacent ends so that the pivotal connection corresponds to an elbow-joint or a knee-joint, in which one of the limb members is provided at or near the pivotal connection with a spring-loaded movable locking member adapted to engage and hold fast a toothed segment or wheel provided on and rigid with the other limb member, the locking member having an operating cord which, on being pulled once, releases the locking member so that it engages the toothed segment or wheel, and which, on being pulled a second time, moves the locking member clear of the toothed segment or wheel so that the two limb members can pivot relatively to each other.

3,833,943

DISPOSAL SYSTEM UTILIZED WITH A HEAT SOURCE

Paul A. Sturtevant, 3880 W. Riverside Dr., Fort Myers, Fla. 33901

Filed July 10, 1972, Ser. No. 270,076
Int. Cl. E03d 11/02, 11/00; B60r 16/04
U.S. Cl. 4—10 9 Claims



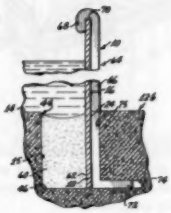
An effluent disposal system for use in conjunction with a high temperature heat source in which waste material is mascerated and meterably discharged into the source of heat as a function of heat source operating conditions such as pressure or temperature, thus insuring the most efficient waste disposal throughout the complete heat source operating range.

3,833,944

FLUID CONTAINING STRUCTURE

Adam D. Goettl, and Bruce A. Goettl, both of Phoenix, Ariz., assignors to Amoy Research and Development Co., Phoenix, Ariz.

Filed May 24, 1973, Ser. No. 363,345
Int. Cl. E04h 3/16; E04g 11/04; E02d 27/01
U.S. Cl. 4—172 3 Claims



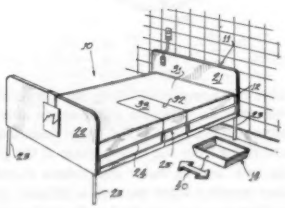
A fluid containing structure including a horizontally disposed base member with means formed therein for positionally engaging the lower end of an upstanding endless wall. Seal and support means provided at the juncture of the lower end of the wall with the base member seals that juncture and structurally supports the wall.

3,833,945

HOSPITAL BED WITH REMOVABLE BED PAN

Nahum Moody, Rt. 1, Dalbo, Minn. 55017

Filed Dec. 3, 1973, Ser. No. 421,063
Int. Cl. A61g 7/02
U.S. Cl. 5—90 3 Claims



A hospital bed having a central edge section of the bed frame and mattress supported thereon adapted to be swingably pivoted to a position beneath the bed frame with a tray then adapted to be similarly pivoted from a storage position to a position replacing the portion of the bed frame which has been pivoted out of the way, the tray adapted to receive a conventional bedpan thereon with the top of the bedpan disposed slightly beneath the top surface of the surrounding mattress for use by a patient in the bed without having to any way lift or shift the patient on the mattress thus avoiding any pain to the patient and any labor for the nurses and other hospital attendants.

3,833,946

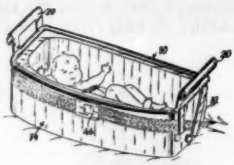
VEHICLE CAR BED FOR INFANTS

Heinrich F. Von Wimmersperg, 15929 Grand River Ave., Detroit, Mich. 48227

Filed Oct. 12, 1972, Ser. No. 296,898
Int. Cl. A47d 7/04
U.S. Cl. 5—94 16 Claims

A vehicle car bed for infants adapted to be secured on a vehicle seat by a conventional seat belt. The bed is designed to be positioned so that it extends crosswise of the vehicle and is

provided at each end with links or brackets for connection with the seat belt and secured to the bed such that the pull exerted on the bed by the seat belt in the event of sudden deceleration of the vehicle extends along a line spaced above



the center of gravity of the bed with the infant therein so that the bed, or at least the bottom and front wall thereof, tilt upwardly and forwardly and absorb the impact of the infant's body over a relatively large area.

3,833,947

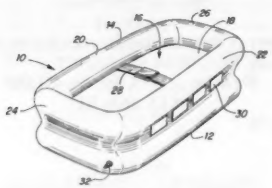
INFLATABLE CRIB

Robert N. Sorensen, 3 Prospect Rd., Billerica, Mass. 01820

Filed Nov. 13, 1972, Ser. No. 305,651

Int. Cl. A47d *7/04;* **A47c** *27/08*

U.S. Cl. 5—94 **15 Claims**



An inflatable crib comprising a base portion generally defining a mattress area; an inflatable wall portion attached to the base portion, and having an inner impervious member connected to and rising from the base portion at the periphery of the mattress area, and an outer impervious member spaced from the inner member when the crib is inflated; and an overhanging shoulder member attached to the wall portion and extending outwardly from the mattress area beyond the inner member for exerting a force on the wall portion downwardly and beyond the mattress area upon deflation of the wall portion.

3,833,948

BOX SPRING ASSEMBLY

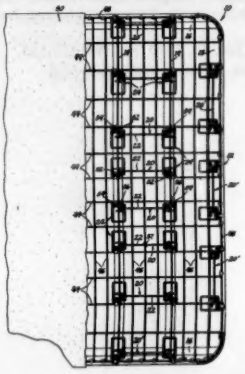
Zygmunt M. Surletta, Detroit; Chester E. Klicki, Warren, and Robert A. Nowack, Troy, all of Mich., assignors to Lear Siegler, Inc., Detroit, Mich.

Filed Mar. 1, 1973, Ser. No. 337,036

Int. Cl. A47c *23/02*

U.S. Cl. 5—247 **18 Claims**

A box spring assembly including a wooden frame with a plurality of spring members arranged on the frame to define a load-supporting area having side and marginal edges. Each of the spring members is defined by an integral wire having a straight section with a fishmouth section at each end thereof. The spring members may be of various configurations but the spring members are isolated from one another and a grid is disposed over and interconnects the spring members. The grid is defined by a first plurality of parallel wires and a second plurality of parallel wires extending transversely and crossing the first plurality of wires. The wires of the grid are clipped to the various spring members. The grid also includes a border wire defining the periphery of the load-supporting area and a plu-



rality of auxiliary spring members are disposed about the periphery of the load-supporting area for supporting the border wire.

3,833,949

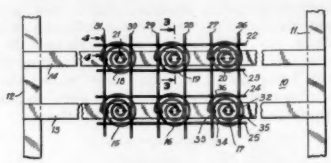
INTERLACED WIRE LOCKING APPARATUS FOR COILED BOX SPRING CONSTRUCTION

James Piliero, 30-83 37th St., Astoria, N.Y. 11103

Filed June 22, 1973, Ser. No. 372,601

Int. Cl. A47c *23/02*

U.S. Cl. 5—259 B **7 Claims**



An interlaced wire grid having mutually interlocking crimped wire segments are each wire intersection is disclosed for frictional engagement with the upper coil turns of coil springs. The grid forms a plurality of individual wire-bound perimeters each having a pair of parallel grid wire sections at equal distances from a supporting framework slat upon which the coil springs are secured, and adjacent parallel sections for completing the locking perimeter forming the frictional engaging surfaces. During assembly parallel wires of the grid may be deformed to admit the top coil and thereafter restored into locking engagement wire-to-wire as well as coil-to-wire perimeter to restrain coil spring movement.

3,833,950

HANDLE CONSTRUCTION FOR MATTRESSES AND THE LIKE

James S. Pappathatos, Burnsville, Minn., assignor to Bechik Products, Inc., St. Paul, Minn.

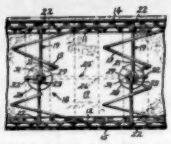
Filed Jan. 22, 1973, Ser. No. 325,845

Int. Cl. A47c *27/00;* **A47b** *95/02*

U.S. Cl. 5—345 B **6 Claims**

A mattress construction having peripheral frame members held spaced apart by resilient means, a top wall, a bottom wall, and opposite side and end walls connecting the top and bottom walls, a plurality of handles in which each includes spaced

resilient anchor members. The anchor members are connected to and extend between the peripheral frame members and are formed to flex toward an opposite side wall to provide auxiliary support for the peripheral frame members. Spaced grommets are mounted in the side wall of the mattress ad-



jacent each of the anchor members. A hand member has a grip portion rigidly connecting spaced leg portions, the leg portions extending through the grommets to the interior of the mattress and being connected to the anchor members whereby lifting forces on the handle members are transferred to the peripheral frame members.

3,833,951

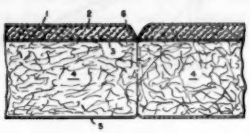
CIGARETTE BURN RESISTANT MATTRESSES HAVING ALUMINIZED POLYURETHANE FOAM LAYER

Melvin D. Hurwitz, Southampton, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed Apr. 2, 1973, Ser. No. 347,036

Int. Cl. B44d *5/00, 1/36;* **C09k** *3/28;* **A47c** *27/22*

U.S. Cl. 5—345 R **9 Claims**



This invention is concerned with flameproofed mattresses, pillows and sleeping bags, pads, cushions for chair or sofas, and so on. The flameproofed materials of the present invention may be formed of (1) a close-woven fabric attached to (2) a thick layer (e.g., 0.1–1 inch) of resilient self-extinguishing polyruethane cushioning foam having (3) a metallized heat-conductive layer, such as of aluminum, which dissipates heat rapidly, thereupon, the metallized foam being secured to (4) filling or padding with (5) a backing fabric secured thereto. The parts are suitably locally secured together by tying means such as stitching, tufting, dielectric welding or the like. The object is to protect the main body of highly combustible filler material in cushions, pillows, mattresses, sofas, upholstered chairs, and the like from fire in case of the dropping of a match, cigarette, or the like on the cover fabric or ticking by someone, such as a careless smoker. Even though the foam is self-extinguishing relative to a lighted cigarette, when not compressed, when it is compressed by tying as by stitching, the heat may be conducted therethrough and ignite the filling or stuffing, if no metal layer is present.

3,833,952

NONLINEAR ENERGY ABSORPTION SYSTEM

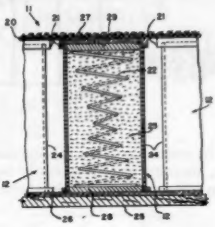
Bruce L. Rosenberg, Atlantic City, N.J., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 18, 1973, Ser. No. 324,614

Int. Cl. A47c *27/04, 27/22*

U.S. Cl. 5—353 **7 Claims**

A military aircraft ejection seat providing normal cushion comfort under ordinary conditions of use and effectively absorbing the inertial energy of the pilot when the seat ejects and undergoes a square wave acceleration. The seat comprises a plurality of cylindrical shaped cushion-like rate nonlinear support elements between a metal seat pan and the buttocks of a



pilot. The cushion-like supports are arranged in a hexagonal pattern and are provided with a helical spring that cushions the pilot in ordinary flight conditions and a flow-dilatant suspension that substantially resists compression only during high rates of compression.

3,833,953

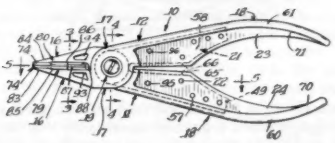
DIELECTRIC TOOL

Julian V. Fisher, Carpentersville, and Daniel C. Heck, Deerfield, both of Ill., assignors to Illinois Tool Works Inc., Chicago, Ill.

Filed Dec. 21, 1973, Ser. No. 427,236

Int. Cl. B25b *7/02, 7/06, 7/22*

U.S. Cl. 7—5.5 **17 Claims**



A tool for use with electric wires and the like is disclosed. The tool comprises two intersecting arms and pivot means. Each arm includes a core member having a three-part work edge at one end and a triangular handle portion at the other end. Dielectric material covers substantially the entire core member of each arm, and forms a T-shaped arm handle with the core member being buried in the T base. The nose is tapered in two planes to permit use in restricted work areas.

3,833,954

FLOATABLE, TELESCOPING, TRANSPORTABLE SHELTER

Raymond S. Daughenbaugh, Ojai; Lewis B. Simon, Oxnard, and Frank R. Braun, Camarillo, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

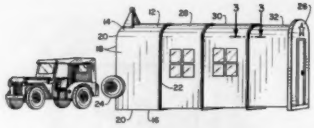
Filed Nov. 1, 1973, Ser. No. 411,931

Int. Cl. B63c *13/00;* **B60p** *3/34*

U.S. Cl. 9—1 R **5 Claims**

A floatable, telescoping, transportable shelter comprises an end section containing a plurality of telescoping middle sections which are pulled therefrom to form the shelter. A bulkhead provides a cover for the end section and a closure member for the last telescoped middle section. Seals for

rendering the shelter water-tight are also provided. Wheels are attached to a side of the end section so that the shelter must be



tipped over on its bottom in order to slide out the telescoping middle section, thereby providing easily removable wheels and imparting maximum stability to the shelter.

3,833,955

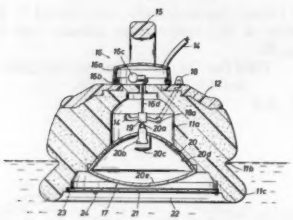
MULTIPURPOSE LIGHT ASSEMBLY

Clarence E. Hulbert, Jr., 212 Mattson, West Columbia, Tex. 77486

Continuation-in-part of Ser. No. 136,799, April 21, 1971, Pat. No. 3,754,135. This application May 13, 1971, Ser. No. 142,914

Int. Cl. B63b *45/00*

U.S. Cl. 9—8.3 E **9 Claims**



A buoyant body of foamed polyurethane equipped with an illuminating light which is directed downwardly into the water when the body is floating on the water's surface. A smaller signal light at the top of the body serves as a warning light. The assembly may be held by a handle formed along its upper end. The light emitting face of the assembly is sealed with a recessed, light transmitting face plate to provide a treated, directional light beam of white light set in a thin annular field of blue light to provide improved illumination in highly reflective environments. Power is preferably supplied from a remote source through a flexible electrical line and a three-way switch is included on the assembly to energize the illuminating light and/or the signal light. The buoyant body has a low center of gravity and is equipped with an annular recess along its outer surface which cooperates with the inset area over the face plate to increase floatation stability when the body is in an upright position.

3,833,956

WATER SKATE

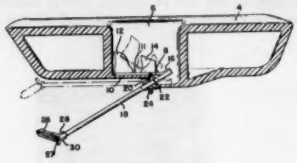
John F. Meehan, 16102 Penninsula Rd., Stanwood, Wash. 98202

Filed June 29, 1972, Ser. No. 267,453

Int. Cl. A63 *15/04*

U.S. Cl. 9—310 D **8 Claims**

A water skate for each foot including a buoyant hull structure. Each hull has a vertically pivotable foot support mounted within a well in the hull. Movement of the foot support actuates a lever arm which is fixedly secured to the foot support and extends rearwardly beneath the hull and terminates in a horizontally disposed blade. The blade reciprocates through



the water as it is moved by the pivotal movement of the foot support and reacts with the water to provide forward movement of the hull on both the upward and downward motion.

3,833,957

BOOT OF THE TYPE COMPRISING A BOOTLEG LINED WITH EXPANDED MATERIAL

Francesco Vello, Venegazzu, Volpago Del Montello, Italy

Filed Mar. 5, 1973, Ser. No. 338,012

Claims priority, application Italy, Mar. 10, 1972, 41538/72

Int. Cl. A43d *9/00*

U.S. Cl. 12—142 E **2 Claims**

An after-ski boot of the type comprising a bootleg and a lining of expanded thermoinsulating material. The boot comprises a hull type sole, of a material unalterable at low temperatures, comprising a base and a flange adapted to be joined to an upper. Integral with the sole, there are provided a part projecting from the base, with a non-slip surface which extends on to the heel and to the toe.

3,833,958

SHOE LAST AND METHOD FOR INSOLE ATTACHMENT MEANS

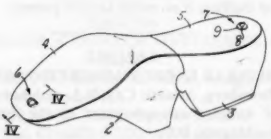
John W. Randall, Leicester, England, assignor to USM Corporation, Boston, Mass.

Filed Oct. 19, 1973, Ser. No. 408,085

Claims priority, application Great Britain, Nov. 9, 1972, 51736/72

Int. Cl. A43d *3/00, 9/00*

U.S. Cl. 12—142 R **7 Claims**



A shoe last having an insole securing member with cutting edges projecting from the forepart of the last bottom, extending lengthwise of the last and being spaced widthwise to cut

into an insole to hold the insole on the last bottom. A method for temporarily securing an insole on a last bottom in which the insole material is compressed between the cutting edges for frictionally holding the insole.

3,833,959

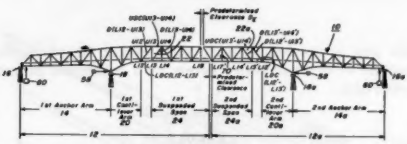
METHOD OF ERECTING A CANTILEVER TRUSS BRIDGE; BRIDGE; PANEL FOR A BRIDGE; AND DUMMY CHORDS FOR PANEL

William K. McGrath, St. Clair Twp., Allegheny County, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Nov. 21, 1972, Ser. No. 308,366

Int. Cl. E01d *19/00*

U.S. Cl. 14—14 **22 Claims**



An improved method of erecting a cantilever truss bridge; an improved bridge; an improved panel for a bridge; and improved dummy chords for a panel are disclosed.

3,833,960

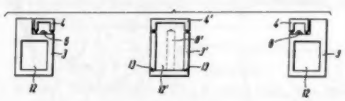
PROCESS FOR THE CONSTRUCTION OF UNDERPASSES AND AN ABUTMENT FOR USE THEREIN

Walter Herth, 2106 Bendestorf 339, and Theodor Musfeldt, 22 Besenbek, Post Elmshorn, both of Germany

Filed Aug. 23, 1972, Ser. No. 282,916

Int. Cl. E01d *19/02*

U.S. Cl. 14—77 **10 Claims**



A procedure for the installation of underpasses beneath existing road structures such as railroad structures is disclosed. The process permits the installation of suitable abutments and central pillars if necessary beneath existing road structures with a minimum delay in the traffic flow over the road structure. Abutments are first positioned beneath the road structure with the areas adjacent the top of the abutments being provided with fillers in the form of coverings covering that area of the abutments which is subsequently to receive superstructures for supporting the road structure. The fillers are provided to enable the building of additional superstructure supports on the said areas after the abutments have been placed in position. The fillers are of generally inverted U-shaped configuration thus providing working area beneath the fillers to enable the formation of the superstructure support. Additionally the disclosure provides prefabricated abutments or pillars for use during construction of wide underpasses beneath existing road structures which consist of a structural body having a more or less rectangular cross-section and having longitudinal hollow cavities, with an upper portion of the abutments being provided with notches or recesses to receive a portion of the superstructure, with those notches or recesses being covered by fillers during insertion of the abutments into the road bed with the fillers being removed during positioning of a bridge supporting superstructure.

3,833,961

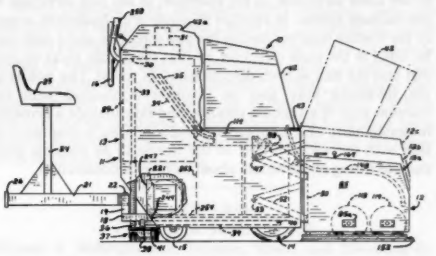
SURFACE MAINTENANCE MACHINE

Lloyd D. Fortman, and Joseph G. Kasper, both of Golden Valley, Minn., assignors to Tennant Company, Minneapolis, Minn.

Filed Sept. 25, 1972, Ser. No. 292,182

Int. Cl. A47l *11/00*

U.S. Cl. 15—50 C **28 Claims**



A surface maintenance machine having a scrubber head unit, a power drive unit that includes a dirty solution tank, a cleaning solution tank, a removable operator's seat whereby the machine may be used as an operator ride-on unit or a walk-behind unit, and a parallel linkage system for moving the scrubber unit between the elevations: (1) A horizontal cleaning position, (2) A horizontal transport position, and (3) An elevated turning position, and in the third position permitting the scrubber head unit being rotated about 90° to a generally vertical position, and lock mechanism to releasably retain the scrubber head unit in either of positions (2) and (3), or the vertical condition, and a propelling steerable front wheel having a brake resiliently retained in a braking condition and a rear squeegee assembly at the rear of the power unit. The scrubber head unit in a horizontal condition is of a substantially greater width than the maximum width of the power unit and about the same width as the rear squeegee assembly which is easily removable, while the height of the scrubber unit in a horizontal position is substantially less than the maximum width of the power unit. The scrubber head unit includes a pair of easily removable, power driven rotatable brushes, a squeegee assembly, and a combination baffle-trough that may be selectively mounted to collect liquid and debris raised by the brushes, or to permit the raised liquid to be recirculated to the surface being cleaned.

3,833,962

NOZZLE FOR VACUUM CLEANER

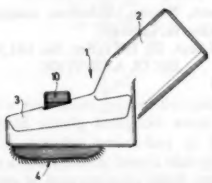
Kurt Krusche, Frankfurt/Main, Germany, assignor to ALL-STAR Verbrauchsgueter GmbH & Co. KG, Frankfurt/Main, Germany

Filed Apr. 17, 1972, Ser. No. 244,806

Claims priority, application Germany, May 12, 1971, 2123436

Int. Cl. A47l *9/06*

U.S. Cl. 15—400 **9 Claims**



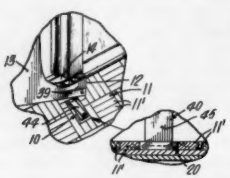
A nozzle for a vacuum cleaner having a hollow nozzle body having means for connecting the vacuum pipe of a vacuum

cleaner to the nozzle body, the nozzle body having a vacuum pick-up opening in a side thereof which is turned away from the connecting means, the part of the opening in the side of the nozzle body being closed by an insert the outer area of which is covered by a brush cover. The insert may either be installed as a part removable from the nozzle body or as a permanent part thereof. In certain of the disclosed embodiments the bristles of the brush cover are tilted with respect to the main extent of the brush cover. The bristles may all be pointed in the same direction, as for example, in the pull direction of the vacuum nozzle. In another illustrative embodiment, a part of the bristles may be tilted in the pull direction and a part may be tilted in the push direction, so that the nozzle picks up lint, dirt and the like in both directions of its travel. The nozzle of the invention may also be pivotally connected with the vacuum pipe of a vacuum cleaner, and may include a pivotally mounted skirt which defines the vacuum area in communication with the vacuum port of the nozzle in all possible positions of tilting of the nozzle about its pivotal connection.

3,833,963
LOCKABLE SAFETY DOOR STOP

S. J. Douglas Waters, 3250 Forest Hill, Montreal, Quebec, Canada

Filed Mar. 6, 1973, Ser. No. 338,450
Int. Cl. E05f *5/02*
U.S. Cl. 16—82 **9 Claims**



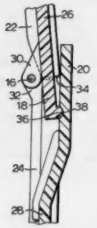
A door stop comprising a floor plate and a stop member which is releasably securable to the floor plate. The floor plate has a flat upper surface with stop retaining means therein. The stop member has a raised barrier surface and a lower surface. Projection means are provided in the lower surface of the stop member for engagement with the retaining means in the floor plate. A locking mechanism is provided in the stop member to secure the stop member to the floor plate in immovable position when the stop projection means is in engagement with the floor plate retaining means.

3,833,964
SELF-LOCKING HINGE

R. Earle Harcourt, Nassau, Bahamas, assignor to Suitcase Shower Ltd., Alberta, Canada

Filed Sept. 20, 1971, Ser. No. 181,962
Int. Cl. A47b *91/06*
U.S. Cl. 16—145 **8 Claims**

A self-supporting self-locking hinge unit is described comprising two or more elongated plastic hinge elements all pivotally joined in end-to-end relation to be hingeable between a side-by-side closed position and a substantially in-line open position. Each adjacent pair of elements are provided with integral projecting tongues which are interengageable with an over-centre action to releasably lock said adjacent elements in their said open position. A plurality of multi-element such hinge units are associated with flexible sheet material and interconnected at the outermost elements of

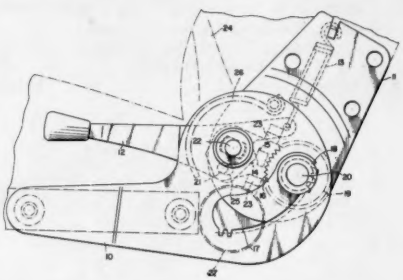


each unit to provide self-supporting screen structure; such structure being exemplified herein by a collapsible portable shower unit.

3,833,965
ADJUSTABLE SEAT INCLINATION FITTING

Peter Hess, Coburg, Germany, assignor to Metallwerke Max Brose & Co., Coburg, Germany

Filed Nov. 6, 1972, Ser. No. 303,695
Claims priority, application Germany, Apr. 1, 1972, 7212432[U]
Int. Cl. E05d *11/10*; **B60m** *1/02*
U.S. Cl. 16—146 **10 Claims**



The back rest and seat fitting members of an automotive seat are pivotally interconnected by means of a cross shaft for adjusting the inclination of the back rest; one of the fitting members is provided with a toothed segment concentric with respect to the pivotal shaft and the other of the fitting members is provided with a rotatably mounted gear wheel in meshing engagement with the toothed segment for driving a larger gear wheel that may be selectively locked against rotation by means of a detent positively cammed into locking engagement by movement of an actuating lever into a first position, with movement of the actuating lever pivotally about the pivotal axis to a second position causing withdrawal of the detent by means of a pin and slot connection between the lever and detent. The detent is guided for radial reciprocation, with respect to the pivotal axis, on the fitting member carrying the gear wheels, and the detent member further has a slot elongated in the direction of reciprocation and surrounding the pivotal shaft. Springs may be provided to bias the actuating lever into its locking position and further for biasing the back rest pivotally to its upright position. One of the gear wheels, preferably the smaller gear wheel in tooth engagement with the gear's toothed segment is integrally formed in one piece with a stub shaft splined entirely to its outer terminal end with a single spline root diameter, a first intermediate outer spline

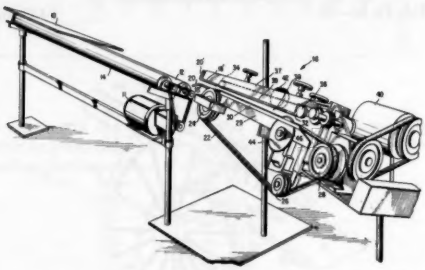
diameter portion receiving an internally splined annular bearing member, and an outermost shaft portion having an outer spline diameter less than said intermediate shaft portion outer spline diameter for receiving with a force fit the larger of the two toothed wheels that selectively meshes with the detent.

3,833,966

METHOD AND APPARATUS FOR KILLING POULTRY

Grover S. Harben, Jr., Gainesville, Ga., assignor to Gainesville Machine Company, Inc., Gainesville, Ga.

Continuation of Ser. No. 22,616, March 25, 1970, abandoned.
This application May 17, 1972, Ser. No. 253,947
Int. Cl. A22b *21/00*
U.S. Cl. 17—1 E 10 Claims



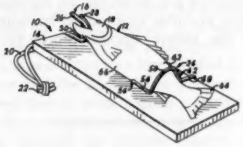
A chicken or other fowl is killed by first stunning with an electrical shock, then by cutting the jugular vein in successive steps rapidly performed. The apparatus includes a wire brush electrode disposed in the path of a chicken conveyor, a spinning circular blade and a head-supporting movable belt for turning the head of the stunned chicken toward the blade.

3,833,967

FISH CLEANING BOARD

Lester C. Kieser, 1038 S. Shore Dr., Kansas City, Mo. 64151

Filed May 29, 1973, Ser. No. 364,702
Int. Cl. A22b *5/14*
U.S. Cl. 17—70 9 Claims



A device for use in cleaning fish has a backup board against which the body of the fish is placed, a hook at one end of the board for holding the head of the fish, and a dual-purpose tool removably clamped on the board adjacent the opposite end thereof for confining the body of the fish during scaling or skinning thereof and, alternatively, for holding one side of the body raised from inside the body cavity during filleting. The tool may be moved along the board as necessary in order to accommodate fish of various sizes, and the tool may be removed from one side edge of the board and replaced upon the opposite side edge of the board with ease during the filleting.

3,833,968

METALLIC CARD CLOTHING

Tohru Arai, and Masayoshi Mizutani, both of Nagoya, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Nagoya-shi, Japan

Filed Mar. 6, 1972, Ser. No. 231,949
Claims priority, application Japan, Mar. 9, 1971, 46-12895
Int. Cl. D01g *15/84;* B32b *15/04, 15/18*
U.S. Cl. 19—114 2 Claims

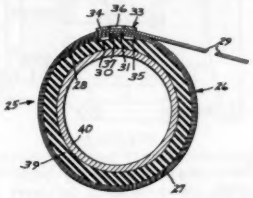
When combing yarn, and particularly synthetic yarn, the metallic card clothing wire has a short life. To extent the life of the card clothing wire, a hard layer selected from a group consisting of vanadium carbide, chromium carbide, tungsten carbide, molybdenum carbide, niobium carbide, tantalum carbide, titanium carbide, zirconium carbide, hafnium carbide and iron boride is difused onto the steel. This hard layer has a smooth working surface and a uniform thickness in the range of from about 8 to 20 microns.

3,833,969

CIRCULAR HOSE CLAMP

Elmont E. Hollingsworth, Winona, Minn., and Llewellyn O. Storlie, Decorah, Iowa, assignors to Deco Products Company, Winona, Mich.

Filed Aug. 29, 1973, Ser. No. 392,492
Int. Cl. B65d *63/06*
U.S. Cl. 24—23 W 12 Claims



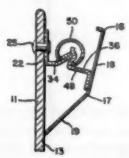
An elongated strap is secured in a spiral form by a band. The band engages a shoulder formed at a first portion of the strap and a second end portion of the strap extends tangentially from the spiral at the band. Aligned apertures are formed in the band in alignment with one aperture formed in the strap adjacent the shoulder. This exposes, in the apertures, strap material from the other strap convolutions which is deformable to secure the clamp in a clamped condition.

3,833,970

CLIPBOARD AND NOVEL HINGE CONNECTIONS

Troy F. Smith, Jr., San Jose, Calif., assignor to The Mead Corporation, Dayton, Ohio

Filed May 24, 1971, Ser. No. 146,493
Int. Cl. B42f *1/00;* A44b *21/00*
U.S. Cl. 24—67.5 15 Claims



A clipboard includes at least one hinge connection having first and second coupling members. The first member has an end portion bent over flush against itself to form an outwardly facing rounded bearing surface and an inwardly facing butt-

end, and the second member has an inwardly facing dimple formed in a portion thereof and defining an oppositely facing projection. The dimple receives the rounded bearing surface, which is retained within the dimple by a split-tube having a first edge retained by the butt-end and a second edge retained by the projection.

3,833,971

CABLE CLAMPS

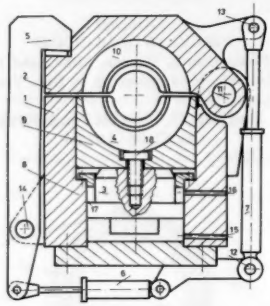
Rudolf Grasman; Walter Hell, and Wilhelm Mullner, all of Vienna, Austria, assignors to Waagner-Biro A.G., Vienna, Austria

Filed Sept. 15, 1972, Ser. No. 289,319

Claims priority, application Austria, Sept. 17, 1971, 8119/71

Int. Cl. F16g *11/00;* **A44h** *21/00*

U.S. Cl. 24—132 WL **6 Claims**



A cable clamp adapted for use in cable-stretching installations. The cable clamp includes stationary and swingable clamp assemblies where the swingable assembly is connected to the stationary assembly for swinging movement with respect thereto between clamping and unclamping positions. The stationary assembly is formed as a power cylinder for a piston guided for movement toward the swingable assembly and urging a lining which directly engages the cable toward a corresponding lining carried by the swingable assembly.

3,833,972

SELF-ADHERING FASTENING FILAMENT

George C. Brumlik, 154 Upper Mountain Ave., Montclair, N.J. 07042

Continuation of Ser. No. 856,964, Sept. 11, 1969, abandoned. This application Aug. 14, 1972, Ser. No. 280,105

Int. Cl. A44b *11/25, 17/00*

U.S. Cl. 24—204 **16 Claims**

A self-adhering fastening device for releasably adhering an opposing article utilizes an elongated filament having a plurality of integral, generally lateral projections defining fastening elements. The filament is initially formed as an elongated body, which may be in the form of a ribbon, having plurality of slits cut along the longitudinal sides of the body, which slits are subsequently opened up to form spaced fastening elements along the length of the body. The slits may be opened by stretching or twisting the body or by applying heat or chemical treatment to the slitted body.

3,833,973

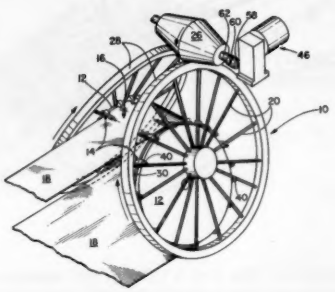
SIMULTANEOUS CONTINUOUS BIAXIAL WEB STRETCHER

Eckhard C. A. Schwarz, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed June 16, 1972, Ser. No. 263,417

Int. Cl. D06c *3/00*

U.S. Cl. 26—59 **4 Claims**



Apparatus for achieving simultaneous, continuous, biaxial orientation of webs including means for feeding the web to clamps positioned about a pair of oppositely canted sheaves, moving the clamped web around the circumference of the sheaves, and removing the biaxially stretched web from the sheaves at a location of wider separation than the feed zone. In one embodiment the clamps are driven by rods rotating parallel to the plane of the sheaves, but about a center which is displaced from that of the sheaves to obtain nearly balanced stretch profiles. Completely balanced stretch is achieved by using slightly s-shaped rods. The clamps accelerate with the web on one semicircle and decelerate on the opposite semicircle. Acceleration provides longitudinal stretching, while the divergence of the sheave circumferences provides lateral stretching.

3,833,974

CORE TRANSFER APPARATUS

Herbert A. Girard, 1025 Woodland Dr., Gastonia, N.C. 28052

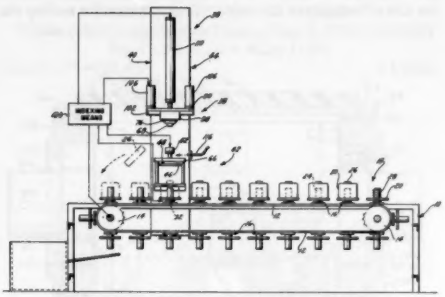
Continuation-in-part of Ser. No. 105,920, Jan. 12, 1971, Pat. No. 3,681,007. This application July 31, 1972, Ser. No. 276,318

Int. Cl. D01h *9/00;* **D02g** *1/20*

U.S. Cl. 28—1 R **9 Claims**

An apparatus for replacing the transfer core of a core supported package with a replacement core includes a frame supported endless conveyor with a core replacement station. A series of spaced yarn package supports are carried by the conveyor. An indexing means is provided for placing the supports containing the yarn packages at the core replacement station.

At this station a puller assembly is provided to grip the transfer core and extract it from the yarn package. Package retention



mechanism is also provided which is adapted to cooperate with the puller assembly for preventing axial movement of the package during removal of the transfer core.

3,833,975

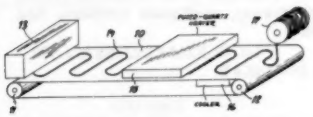
METHOD OF BULKING AND HEAT-SETTING YARN

Hugo N. Cahnman, Kew Gardens, N.Y.; Frank Sterne, Wyckoff, N.J., and Douglas M. Canfield, White Plains, N.Y., assignors to Hugo Cahnman Associates, Inc., Kew Gardens, N.Y.

Filed Nov. 13, 1972, Ser. No. 306,159

Int. Cl. D02g *1/00*

U.S. Cl. 28—72.1 **3 Claims**



A method of and an apparatus for the bulking (texturizing) and heat-setting of synthetic-resin yarn which utilizes the unique properties of a special fused-quartz radiant heater whose surface is generated by a line parallel to the movement of the filament past the heater. The filament may simply be passed between two or more spacedly juxtaposed heaters of this type, can be conveyed on a moving surface past the heater or may pass through an annular heater whose surface generatrices are parallel to the yarn.

3,833,976

PROCESS FOR TEXTURING YARN BY GEAR CRIMPING

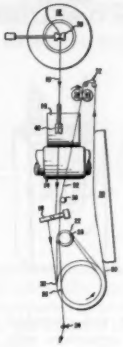
Stanley Robert Cochran, Martinsville, Va., and Melvin Harry Johnson, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 20, 1972, Ser. No. 316,744

Int. Cl. D02g *1/14*

U.S. Cl. 28—72.15 **5 Claims**

A continuous process for imparting crimp to synthetic yarn includes the steps of drawing the yarn, heating the drawn yarn, then passing the yarn through the nip of a pair of crimper gears. An essential feature of the process is operation of the



crimper gears to avoid further drawing of the yarn in the nip of or upstream of the gears.

3,833,977

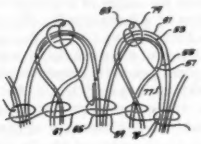
METHOD FOR MAKING THREE-DIMENSIONAL STITCHERY ORNAMENTS

Alice Stewart, 32761 Seven Seas Dr., Laguna Niguel, Calif. 02677

Division of Ser. No. 209,058, Dec. 17, 1971, Pat. No. 3,781,954. This application July 30, 1973, Ser. No. 383,973

Int. Cl. D06m *17/00*

U.S. Cl. 28—77 **4 Claims**



Three-dimensional stitchery creations are formed according to predetermined stitchery methods on apparatus comprising a base member having dimensions of height, width and length according to the three-dimensions of the stitchery creations formed thereon. The base member has a plurality of surfaces over which are distributed a multiplicity of projections about which stitchery materials may be looped and woven on a given surface and from one surface to another according to the predetermined stitchery methods forming the three-dimensional stitchery creation.

3,833,978

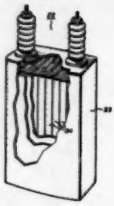
STABILIZED ESTER IMPREGNANT

John W. Eustance, South Glens Falls, N.Y., assignor to General Electric Company, Hudson Falls, N.Y.

Continuation-in-part of Ser. No. 281,204, Aug. 16, 1972, Pat. No. 3,754,173. This application June 12, 1973, Ser. No. 369,203

Int. Cl. H01g *13/00*

U.S. Cl. 29—25.42 **6 Claims**



A high temperature and extended time method of impregnating electrical capacitors with an epoxy stabilized dielectric liquid aromatic ester.

3,833,979

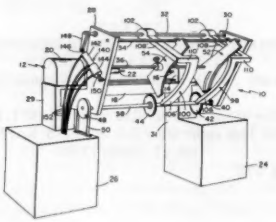
FEED AND TRIM APPARATUS

Robert W. Seavey, 79 Aberdeen Rd., Weston, Mass. 02193

Filed Aug. 27, 1973, Ser. No. 391,583

Int. Cl. B26d *9/00*

U.S. Cl. 29—27 C **21 Claims**



Apparatus for advancing successive longitudinally-extending workpieces from the outlet of a storage hopper into position for engagement by a lathe spindle, the apparatus including a movable feed arm having a recess for engaging an intermediate portion of one of the workpieces, a driver for moving the feed arm in a plane generally perpendicular to the longitudinal axis of a workpiece engaged thereby between a first position wherein the recess is adjacent the hopper outlet and a second position wherein the recess is aligned with the lathe spindle, and a saw blade intermediate the hopper outlet and lathe spindle along the path of movement of the feed arm, the blade being in a plane parallel to the plane of movement of the feed arm and being arranged for cutting an end portion from a workpiece engaged by the feed arm during movement of the feed arm from the first position to the second position.

3,833,980

ROLL FOR APPLYING PRESSURE

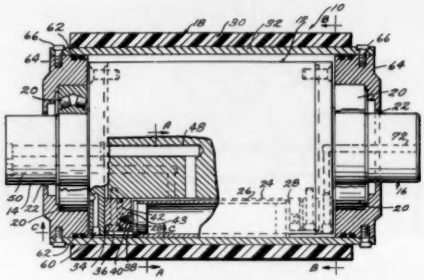
Stephen B. Gaghan, Franklin Lakes, N.J., assignor to Van Vlaanderen Machine Company, Inc., Patterson, N.J.

Filed Apr. 27, 1973, Ser. No. 355,305

Int. Cl. B21b *13/02*

U.S. Cl. 29—116 AD **8 Claims**

A roll for applying pressure comprising two shafts, a stationary inner structure mounted between the shafts, a slot extending substantially throughout the length of the inner structure, a rotatable outer cylinder surrounding the inner structure, means mounted on each shaft to rotatably support the outer cylinder, an inner roller disposed within the slot defined in the inner structure, said slot being substantially parallel to the axis of rotation of the outer cylinder, means for sealing the inner roller in the slot to form a chamber adapted to contain a pressurizing fluid, a fluid passage means for supplying fluid through one of the shafts into the chamber, said chamber and inner structure being adapted by the force of the fluid to urge the inner roller against an inner surface of the rotatable outer cylinder, and means for applying a force to the roll whereby the outer cylinder is urged toward the opposing surface.



3,833,981

PROCESS FOR MAKING A SPHERICAL SEGMENT FOR A SUPPORTING MEMBER OF A SPIRAL GROOVE BEARING

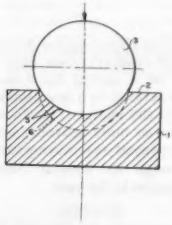
Wolfgang Hepp, Immenstaad; Klaus Pimiskern, Friedrichshafen, and Werner Herbert, Markdorf, all of Germany, assignors to Dornier System GmbH, Friedrichshafen, Germany

Filed June 25, 1973, Ser. No. 373,135

Claims priority, application Germany, Aug. 11, 1972, 2239638

Int. Cl. B21d *53/12*; **B23p** *11/00*

U.S. Cl. 29—148.4 R **3 Claims**



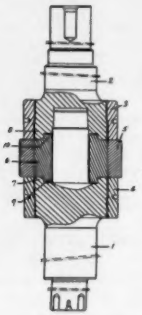
This invention relates to a process for making a spherical cap or segment for a bearing supporting member of a spiral groove bearing having a spherical shaft end, which comprises pre-stamping a planar end face of a solid body of a hardenable alloy by means of a substantially spherical tool having a greater radius than the spherical cap or segment to be made, to approximately half the depth and nearly the diameter of the segment to be made, and producing the desired exact concave stamping of the spherical cap or segment by a second tool means calibrated to the desired final dimensions of the spherical segment.

3,833,982

METHOD OF MOUNTING RINGS OF HARD SINTERED METAL ON A ROLLING CYLINDER

Jean Paulin, St-Martin D'Heres, France, assignor to Ugine Carbone, Grenoble, France

Filed May 3, 1973, Ser. No. 356,845
Claims priority, application France, May 4, 1972, 72.15809
Int. Cl. B21h *1/14*; B23p *11/02*
U.S. Cl. 29—148.4 D 7 Claims



In a device for hot rolling metal wires and strip, a rolling cylinder embodying a supporting ring and a working ring mounted on the cylinder with the supporting ring having a coefficient of expansion approximating that of the working ring and a clearance between its inner periphery and its support with the working ring fitted onto the supporting ring with a clearance of not more than a few hundredths of a millimeter and means engaging the axial portions of the working ring to prevent axial displacement whereby the forces generated under operating conditions operate to apply compressive forces to the working ring.

3,833,983

METHOD OF MAKING ALUMINIUM BEARING ALLOY STRIP

William Albert Baker, New York, N.Y.; John Arthur Wheatley, Adderbury West, England; Peter John Read, South Newington, England; Keith Graham Latimer, Greatworth, England, and Terence David Warren Reynolds, Daventry, England, assignors to Alcan Research and Development Limited, Montreal, Quebec, Canada

Filed June 14, 1973, Ser. No. 369,804
Claims priority, application Great Britain, June 21, 1972, 29172/72
Int. Cl. B21d *53/10*
U.S. Cl. 29—149.5 S 8 Claims

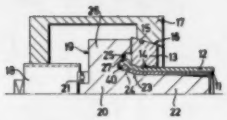
An aluminium-lead bearing alloy, optionally containing tin, silicon, copper and cadmium, is produced in strip form by spraying droplets of the molten metal onto a substrate under conditions such that they strike the substrate in a highly undercooled condition and are chilled to solidification at the substrate at the rate of at least 103°C/second so as to precipitate the lead in the form of a fine dispersion of separate particles. The deposit of solidified droplets is then subjected to compaction. A surface layer of commercial purity aluminium or other suitable aluminium alloy may be applied to one or both surfaces of the aluminium-lead alloy strip to facilitate the production of a composite bearing alloy- steel strip by a roll-bonding procedure.

3,833,984

PROCESS AND ARRANGEMENT FOR DOUBLE FLANGING OF PIPES

Klaus Dietzel, Kapellen, Germany, assignor to Zako Rohrverbindungen GmbH & Co. KG, Dusseldorf, Germany

Filed June 27, 1972, Ser. No. 266,572
Claims priority, application Germany, June 29, 1971, 2132190
Int. Cl. B21k *29/00*; B23p *11/02*
U.S. Cl. 29—157 R 7 Claims



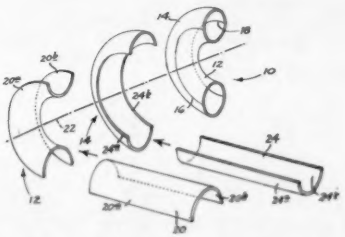
A process and arrangement for double flanging of pipes for making fluid-tight pipe joints. The pipe has a plastic interior coating and is coaxially mounted on an inner tubular pipe joint member having a collar and a conical bearing surface which is at least partially roughened.

3,833,985

METHOD FOR MAKING CURVED TUBES

John L. Curry, 3117 N.W. Williamette Blvd., Portland, Oreg. 97217

Filed Nov. 13, 1972, Ser. No. 305,970
Int. Cl. B21d *53/00*, *11/02*
U.S. Cl. 29—157 A 4 Claims



A method of forming a curved tube. The method includes a first step of deforming a pair of sheets to form a pair of elongated semicylinders, each having opposed cheek regions extending longitudinally along its opposite sides. The semicylinders then are drawn around dies to bend them into curves in which their axes of curvature are normal to the cheek regions; with the cheek regions of one of the elements directed radially outwardly from the axis of curvature and the cheek regions of the other element directed radially inwardly toward the axis of curvature. The two elements then are joined to each other, as by welding, along edges bounding their cheek regions.

3,833,986

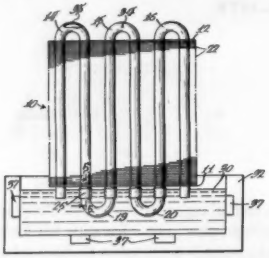
METHOD OF MAKING HEAT EXCHANGER

Michael A. DeCicco, South Bend, Ind., assignor to Sundstrand Heat Transfer, Inc., Dowagiac, Mich.

Filed June 4, 1973, Ser. No. 366,372
Int. Cl. B21d *53/00*; B21k *29/00*; B23p *15/26*
U.S. Cl. 29—157.3 A 11 Claims

A method of making fluid-tight telescopic joints in serpentine aluminum tubing for heat exchangers with a plurality of relatively long U-shaped aluminum tubing sections for supporting aluminum fins stacked in spaced relation thereon and

a plurality of short U-shaped aluminum tubing sections each having opposite ends adapted to telescopically fit in the ends of the long sections of tubing to connect adjacent ends of the long sections, including the steps of providing an aperture in at least one of the long tubing sections for venting the tubing during soldering, assembling the short tubing sections with the ends thereof telescopically positioned in the ends of the long tubing sections and spaced therefrom to permit the flow of



solder into the telescopic joints, dipping the assembly in the fluid solder to immerse the short tubing sections and the lower ends of the upper tubing sections to a depth just below the upper ends of the lower tubing sections to flow solder into the telescopic joints while venting the tubing through the aperture in the long tubing section, introducing ultrasonic vibrations into the solder while the assembly is dipped, and closing the aperture in the long tubing section by brazing.

3,833,987

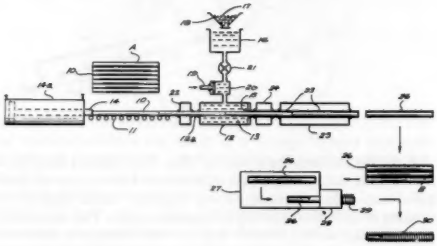
FINNED TUBES FOR USE IN HEAT EXCHANGERS

Tom E. Owen, Houston, Tex., assignor to Hudson Products Corporation, Houston, Tex.

Continuation of Ser. No. 114,229, Feb. 10, 1971, abandoned. This application Jan. 24, 1973, Ser. No. 326,543

Int. Cl. B21d *53/02*; **B23p** *15/26*

U.S. Cl. 29—157.3 A **5 Claims**



A method of manufacturing a finned tube in which fin stock is first formed as a sheath on a liner tube and the sheath is then extruded to form the fins hereon.

3,833,988

METHOD OF MAKING SPOOL VALVES

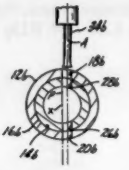
John D. Tobias, 233 E. Bloomfield, Royal Oak, Mich. 48073

Continuation-in-part of Ser. Nos. 282,964, Aug. 23, 1972, abandoned. Continuation-in-part of Ser. No. 230,845, March 1, 1972, abandoned. Division of Ser. No. 97, 140, Dec. 11, 1970, Pat. No. 3,700,004. This application Oct. 24, 1972, Ser. No. 300,166

Int. Cl. B23p *13/00*

U.S. Cl. 29—157.1 R **17 Claims**

A method of making a spool valve includes forming perforations in the core and sleeve members of the valve in a single machine operation. The perforations are formed offset from and parallel to a plane which includes the axis of the core and sleeve members. The perforations may take a wide variety of shapes including round, rectangular or peripheral channels.



The valve becomes functional by rotating or longitudinally adjusting the relative positions of the core and sleeve members to selectively align or block the perforations of the core member with respect to the sleeve member.

3,833,989

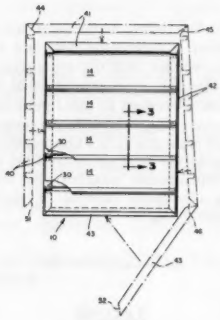
METHOD OF FABRICATING AND ASSEMBLING A DAMPER

Francis J. McCabe, P.O. Box 181, Buckingham, Pa. 18912

Filed Apr. 26, 1973, Ser. No. 354,680

Int. Cl. B21d *53/00*

U.S. Cl. 29—157 R **5 Claims**



A damper is assembled from a formed frame material having a flange provided with hook-shaped hinge portions formed from the flange and arranged so that when the frame material is folded into the shape of a frame, the hinge portions will be on oppositely positioned sides; and a plurality of blades having complementally configured hook-shaped portions for engagement therewith, by inserting one end of each blade into one complementally configured hook-shaped portion on the flange at one side of the damper frame prior to folding, and then folding the damper frame material about the blades so that the hook-shaped portions on the other side of the damper frame engage the other ends of the blades.

3,833,990

METHOD OF MAKING A PRECIOUS METAL POSTAGE STAMP

Madeleine Boccard, 25 rue de l'Arquebruse CH-1204, Geneve, Switzerland

Continuation-in-part of Ser. No. 246,524, April 24, 1972, abandoned. This application Jan. 15, 1974, Ser. No. 433,522

Int. Cl. B23p *17/00*

U.S. Cl. 29—412 **3 Claims**

A method of making precious metal postage stamps which can be very finely worked in intricate designs without creating

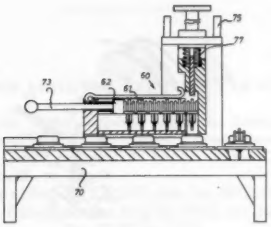
any cracks or holes in the metal. The method includes the steps of laminating a precious metal sheet in a plurality of different rolling-mills, manually beating the laminated sheet with a hammer, this beating being carried out such that one or more hammers are moved along a trapezoidal path during the beating operation, coating one side of the sheet with an adhesive agent and forming a relief design in the sheet.

3,833,991

APPARATUS FOR FASTENING THE CASING OF A SEMICONDUCTOR COMPONENT TO A MOUNTING PLATE

Klaus Friedrich Hehl, Norderstedt, Germany, assignor to ITW-ATECO GmbH, Norderstedt, Germany

Filed Feb. 16, 1973, Ser. No. 333,200
Claims priority, application Germany, Feb. 18, 1972, 7206020
Int. Cl. H05k *13/04*
U.S. Cl. 29—203 B **2 Claims**



An apparatus for fastening the casings of semiconductor components to mounting plates. The apparatus includes a fitting table on which mounting plates and casings are held fixedly against one another in the position of attachment and further includes a fastening station and means for conducting said mounting plates to the fastening station. A magazine is provided at the fastening station for holding fastening devices consisting of resilient bows and insulating pieces with further means being provided for pushing the fastening devices over the casings to anchor them to the mounting plates.

3,833,992

ASSEMBLY TOOL FOR REPLACEMENT OF WIRE SEAL, ELECTRICAL CONTACT

Norbert L. Moulin, Placentia, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed June 1, 1973, Ser. No. 365,893
Int. Cl. H05k *13/00*
U.S. Cl. 29—203 H **7 Claims**

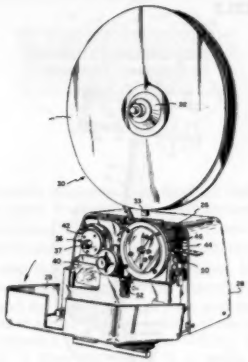
The tool enables replacement of a defective individual seal at the wire end of an electrical contact without the need to remove and/or shorten the cable from the contact. The tool comprises a shaft having at one end a tubular portion into which the contact is inserted. The other end of the tool is tapered to permit the replacement seal to be slipped onto the tool. Intermediate its ends, the tool is provided with a portion of increasing taper from the seal receiving end to the tubular end. Thus, the seal may be slipped over the seal receiving end and slid along the shank of the tool and expanded onto the tubular end. When the contact with its attached cable is placed within the tubular end, the seal may be slipped from the tubular end and onto the contact and cable.

3,833,993

CRIMPING APPARATUS

Ward Joseph Kremkau, Mechanicsburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed May 12, 1972, Ser. No. 252,792
Int. Cl. B23p *19/04*; **H01r** *43/04*
U.S. Cl. 29—203 D **4 Claims**



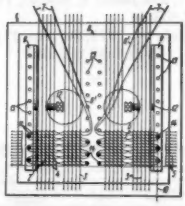
The present invention discloses a crimping apparatus useful for crimping terminal contacts onto electrical wires and more particularly to improved indentors having an adjusting member whereby each indentor can be adjusted to insure equal depth penetration, and further disclosed is an improved funnel and funnel cam wherein the funnel is spring driven against a cam having a blocking portion, a funnel opening portion and a ramp portion operable to return the funnel to a closed position.

3,833,994

DEVICE FOR MAKING DIGIT WINDING LOOPS IN MEMORY STORAGE MATRICES

Jury Alexandrovich Burkin, Tsvetnoi proezd 29, kv. 24, and Jury Emelyanovich Seleznev, Vesenny proezd, 4-a, Kv. 16, both of Vovosibirsk, U.S.S.R.

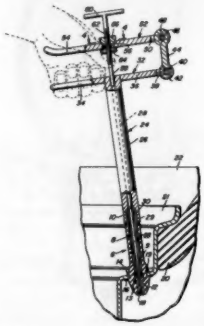
Filed June 20, 1973, Ser. No. 371,699
Claims priority, application U.S.S.R., Dec. 7, 1972, 1856391
Int. Cl. H05k *13/04*
U.S. Cl. 29—203 MM **1 Claim**



A device for making digit winding loops in memory storage matrices comprises a memory plane frame having cores threaded with coordinate wires lying in both directions, needles at the leading ends of the wire for wiring a digit winding, and a surface plate temporarily fastened to the frame and having also attached thereto at least one movable strip disposed along the row of oppositely lying loops, the surface plate and the movable strips having openings arranged so as to correspond to the position of the digit winding loops in the matrix; the device is also provided with clamps fixing the

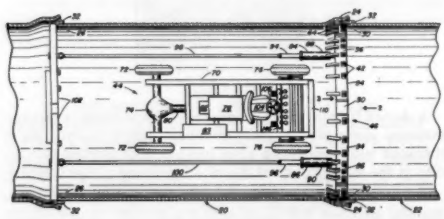
movable strips in place, and detachable connectors the number of which is equal to that of the loops in the matrix.

3,833,995
VALVE STEM AND VALVE STEM TOOL
Seth E. Rutledge, P.O. 141, Lakeland, Fla. 33802
Filed Mar. 29, 1973, Ser. No. 345,829
Int. Cl. B23p *19/04*
U.S. Cl. 29—221.5 **7 Claims**



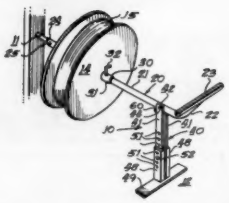
A hand tool capable of handling and forcibly inserting and anchoring a rubber valve stem in an opening provided therefor in a tubeless tire rim. This tool is unique in that it, unlike prior art tools, accomplishes the insertion and mounting step from the exterior of the rim and, in so doing, obviates the necessity of laboriously freeing and disenaging the bead of the mounted tire from the rim. Novel end thrust means provides a projectible and retractable leading end engageable with the usual self-contained fitting. The end thrust means forcibly stretches and reduces the cross-sectional dimension of the valve stem for passage through the rim opening. Conversely, when retracted the valve stem returns to normal. The outstanding rim abutting flanges are lodged in place in a manner to seat and anchor the valve stem.

3,833,996
METHOD AND A MACHINE FOR ALIGNING AND JOINING PIPES
Don P. Hubbard, 410 Vista Arroys Dr., Encinitas, Calif. 92024; Richard N. Levake, 960 Nobley, Cardiff-By-The-Sea, Calif. 92007, and James A. Steiger, 1911 Raymond Ln., Oceanside, Calif. 92054
Filed July 14, 1972, Ser. No. 271,802
Int. Cl. B23p *19/04*
U.S. Cl. 29—237 **10 Claims**



The invention is directed principally to a process of joining pipes of large diameter, for example, pipes used in conveying water from dams to reservoirs, and to a machine for carrying out the process. Such pipes each have a bell at one end and the other end is of smaller diameter than the bell end and referred to in the trade as the "spigot end." The spigot end is provided with a shoulder. The machine can be disposed within the pipe that is laid and it includes mechanism that is extendible into the spigot end of the pipe to be laid, the mechanism including rollers that are brought into abutting relationship with the shoulder at the spigot end of the pipe to be laid. The machine, through the shoulders, draws the spigot end of the pipe to be laid into sealing relationship with the bell of the pipe that was laid.

3,833,997
SPOOL MOUNTING TOOL
Sheldon L. Kaddatz, and Bonnie E. Kaddatz, both of R.R. No. 4, Box 426, Forest's Edge, Burlington, Wis. 53105
Filed Aug. 20, 1973, Ser. No. 390,102
Int. Cl. B23p *19/04*
U.S. Cl. 29—267 **6 Claims**

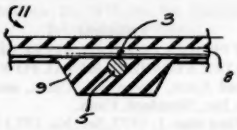


A spool mounting tool for the lifting and mounting of a spool having cable, rope, wire and the like wrapped thereabout in a manner to mount the spool on a horizontal supporting unwinding shaft, the tool consisting of a lifting rod lever having an elongated body portion with generally opposed first and second ends, the second end being associated with a second end portion of the body portion that is bent out of the axis of the body portion to form a concave angle therewith, a handle attached to the rod's second end and extending to opposite sides of the rod, a hollow sleeve member adjustably slideably received on the rod body portion adapted to engage a spool placed on the rod intermediate the sleeve and the front rod end at which time the sleeve is secured to the rod by a locking device on the sleeve in a manner to temporarily retain the spool in the selected position on the rod, and a supporting and stabilizing member having one end pivotally connected to the rod intermediate the body portion and second end portion thereof and adapted to swing vertically relative to the rod between an inoperative position laying on a ground surface and an operative supporting and stabilizing position resting on the ground substantially perpendicular to the axis of the rod body portion such that a spool placed on the rod may be lifted and engaged onto an unwinding shaft by the tool which controls both the initial tilting, lifting and swinging movement of the spool in the application of the spool to the unwinding shaft.

3,833,998
METHOD OF FORMING A SPLICE IN A TOOTHED POWER TRANSMISSION BELT
Edward G. Tomlinson, Abington Twp., Montgomery County, Pa., assignor to Uniroyal, Inc., New York, N.Y.
Division of Ser. No. 250,393, May 4, 1972, Pat. No. 3,744,095.
This application May 14, 1973, Ser. No. 360,243
Int. Cl. B22d *19/10*; **B23p** *7/00*
U.S. Cl. 29—401 **5 Claims**

A splice for toothed power transmission belts having connecting pins for holding the abutting ends of the belt together. The connecting pins each pass through a tooth of the belt in

the splice region. The pin is placed in adjacent proximity to the tension cords in the belt so that these reinforcement cords will acquire the load transmitted to the pin. As a result, a



stronger and more durable splice is achieved. The above splice may also be used for repairing damaged or worn belts by inserting a new piece of belt having a splice at each end.

3,833,999

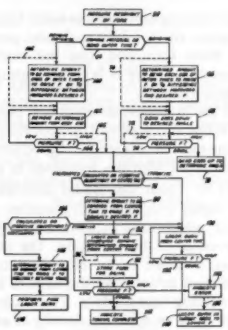
METHOD OF ADJUSTING FREQUENCY OF VIBRATOR STRUCTURE

Irvin Budych, Lake Geneva; LaVerne Lawrence Frey, Delavan, both of Wis., and William Edward Reefman, Santa Barbara, Calif., assignors to Bunker Ramo Corporation, Oak Brook, Ill.

Division of Ser. No. 220,357, Jan. 24, 1972, Pat. No. 3,759,133. This application May 24, 1973, Ser. No. 363,324

Int. Cl. B23q *17/00*

U.S. Cl. 29—407 **13 Claims**



A method and apparatus for tuning and adjusting the frequency of a vibrator structure such as a tuning fork of the type formed from a single strip of low molecular loss material. Tuning is effected by bending one or more of the tines of the fork or preferably by bending an ear formed for this purpose on a tine. In the alternative, the frequency may be controlled by selectively removing material from an ear.

In order to maintain the balance of the structure it is desirable that tuning be performed on both tines of a fork. A preferred method for performing the tuning involves forming the structure in a manner such that its frequency is always lower than required. This frequency is then measured and half the difference in frequency is corrected by bending ears formed on an outer tine. Material is then removed from an inner tine by, for example, burning the material off with a laser, to raise the frequency to the desired value.

3,834,000

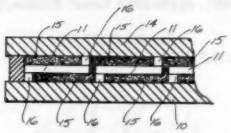
METHOD OF MANUFACTURING A MULTI-WEBBED EXPANDED STEEL PANEL

George D. Miller, Middletown, Ohio, assignor to Armco Steel Corporation, Middletown, Ohio

Filed Oct. 20, 1972, Ser. No. 299,281

Int. Cl. B23p *17/00*

U.S. Cl. 29—411 **10 Claims**



This application discloses a method of making a multi-webbed steel panel. It discloses the preparation of a starting sandwich comprising top and bottom plates and a plurality of web bars therebetween. The web bars are coated on both sides with a weld-stop material except for stripes along opposite edges on opposite sides thereof. The assembled sandwich is fixed in position by means of edge bars and end bars, all of which are welded to the top and bottom plates to completely enclose the sandwich and to prevent shifting during rolling. This sandwich is then hot rolled in a series of passes to produce a reduction of at least 25:1 and even up to 75:1 to produce a long length of strip which is then sheared to length and the panel opened up by conventional means. Details of the stop-weld material and the manner of applying it are disclosed as well as rolling considerations involved.

3,834,001

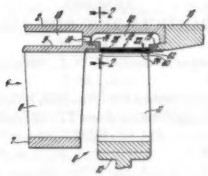
METHOD OF MAKING A POROUS LAMINATED SEAL ELEMENT

Charles D. Carroll, Greensburg, and George B. Meginnis, Indianapolis, both of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 17, 1972, Ser. No. 307,446

Int. Cl. B23p *17/00*

U.S. Cl. 29—414 **4 Claims**



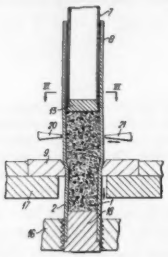
A porous seal element usable as a blade tip seal in a turbomachine or as an element of a labyrinth seal is made up of a large number of strips disposed edgewise to the sealing face of the element and extending in the direction of relative movement of the seal elements. The strips have grooves extending across the strip for discharge of a cooling fluid such as air. The presence of the grooves provides a low density structure at the seal face of the seal element which may be abraded if there is rubbing contact and provides for metering of coolant at the rear face of the seal element. The seal element is fabricated by etching sheets so each sheet defines a number of parallel strips joined by weak ties and with the grooves extending across the strips; stacking the sheets and bonding them together; and then separating the bonded structure at the weak ties so that each stack of strips defines a seal element.

3,834,002

METHOD OF MANUFACTURING A COMPOSITE METAL SHEATHED WELDING ELECTRODE

Anthony Chamberlen Sissons, Frodsham near Warrington, and Malcolm Anthony Cairns, Gateshead, both of England, assignors to Pyrotenox Limited, Hebburn-on-Tyne, Durham, England

Filed Sept. 8, 1972, Ser. No. 287,438
Claims priority, application Great Britain, Sept. 10, 1971, 42380/71
Int. Cl. B22f 3/24
U.S. Cl. 29—420.5 13 Claims



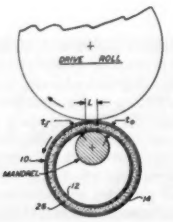
A composite metal sheathed welding electrode is manufactured as a continuous operation by drawing a preformed metallic tube containing a particulate material consisting of or comprising a deoxidizing agent vertically downward through a drawing die. The die is of such a form that the tube is reduced in diameter during its passage through the die and powder or granules are fed into a part of the tube in advance of the die at a rate to maintain the said part substantially full of powder or granules. The height of the column of particles above the die is at least sufficient to avoid "push-back" of particles. The overall diameter of the filled tube is then further reduced to compact further the particulate core. The preformed tube may be of a composite form comprising inner and outer parts, the outer part being of a different metallic material from that of the inner part.

3,834,003

METHOD OF PARTICLE RING-ROLLING FOR MAKING METAL RINGS

Harbhajan S. Nayar, Plainfield, N.J., assignor to Airco, Inc., Montvale, N.J.

Continuation-in-part of Ser. No. 303,160, Oct. 30, 1972, abandoned. This application June 27, 1973, Ser. No. 374,184
Int. Cl. B22f 3/24
U.S. Cl. 29—420.5 31 Claims



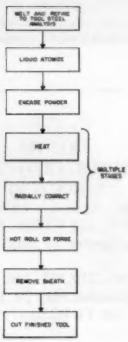
The annular space in a donut type metal can is filled with metal particles, the can sealed to constitute an annular workpiece, and the piece hot ring-rolled for expansion to an integrated metal ring of comparatively large diameter.

3,834,004

METHOD OF PRODUCING TOOL STEEL BILLETS FROM WATER ATOMIZED METAL POWDER

Maurice Donald Ayers, Greenwich, Conn., assignor to Metal Innovations, Inc., Stamford, Conn.

Filed Mar. 1, 1973, Ser. No. 337,139
Int. Cl. B22f 3/24
U.S. Cl. 29—420.5 13 Claims



A method of producing tool steels in billet form, based upon the initial production of atomized tool steel powder which is consolidated to billet form and then hot worked and subsequently processed in a more or less conventional manner to achieve cutting tool material.

The process of the invention involves first preparing a body of molten steel, refined to appropriate tool steel analysis, and then subjecting the molten tool steel to liquid atomization substantially in accordance with the teachings of my prior U.S. Pat. No. 3,646,176. From this liquid atomization there is achieved small, highly irregular steel particles of adequately low oxide content, which have exceptional properties for the purpose of the process of the invention. The atomized metal particles are then encased in an elongated tubular sheath formed of a mild steel tubing, and the ends of the tubing are closed off as by welding caps in place. The encased metal particles at this stage have an apparent density of around 45 percent.

After encasement, the metal particles are consolidated in two or more stages, involving heating of the metal particles and subsequent radial compaction. In the first stage, the metal is heated to a temperature in the range of 1,700° to 2,250° and then compacted, preferably by rotary swaging. In the second stage, the metal particles are heated to a somewhat higher temperature, 1,800° to 2,300°, and the heated particles are again subjected to radial compaction, ideally in a rotary swaging machine. After compacting in a second stage, the confined metal powder has been consolidated to an apparent density of at least 80 percent, and ideally to a density of 85 percent or higher. At this stage, the billets are in suitable form for hot working to size. In the course of this process, the metal is consolidated further substantially to 100 percent density.

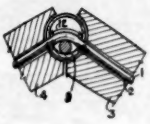
After a billet has been hot worked to final size, the original encasing sheath is removed, typically by grinding, to expose the core of extremely high quality tool steel. This exposed core may be handled in a conventional manner to derive the ultimate cutting tools therefrom.

3,834,005

METHOD OF THREADING A CABLE THROUGH PANEL AND TUBE SECTIONS TO MAKE A FOLDING STRUCTURE

Delp W. Johnson, 240 Oakview Dr., San Carlos, Calif. 94070

Filed Nov. 20, 1972, Ser. No. 308,020
Int. Cl. B23p *19/04*
U.S. Cl. 29—433 11 Claims



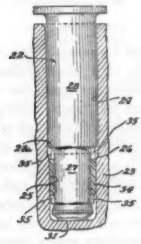
A method of constructing a structure whose surface can be approximated by a series of folded intersecting planes; in which a series of panels and tubes are arranged in an alternating sequence in a coplaner relationship; and which series of panels and tubes is fastened together by cables threaded continuously through the panels and holes in the tubes, and securing the ends of the cables to make taut and hold the edges of the panels tight against the tubes. The holes in the tubes are of a size and configuration to permit the panels to rotate freely around the tube and in so doing to increase the tension in the cables. The object of the invention is to provide a method of construction for folding structures wherein the folding action of panels serves to increase the tension in cables holding the structure together.

3,834,006

METHOD OF ASSEMBLING SUPPORTING PINS WITHIN A CASTER WHEEL PIVOT BOSS BORE

Frederick C. Greene, St. Joseph, Mich., assignor to Shepherd Products U.S. Inc., St. Joseph, Mich.

Division of Ser. No. 131,339, April 5, 1971, Pat. No. 3,755,852. This application Apr. 11, 1973, Ser. No. 349,950
Int. Cl. B23p *19/00*
U.S. Cl. 29—436 3 Claims



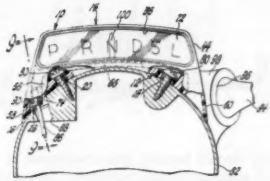
A tilted axle caster pivot fastening. The pivot is formed with an end enlargement without the necessity for machining operations and is received within a plastic sleeve which is frictionally engaged with the inner end portion of the pivot boss bore in the caster body.

3,834,007

METHOD OF ASSEMBLY AND JOINING SHIFT INDICATOR COMPONENTS

Theodore Lambiris, Walled Lake, Mich., assignor to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 194,128, Nov. 1, 1971, Pat. No. 3,762,361. This application Apr. 27, 1973, Ser. No. 355,151
Int. Cl. B23p *11/02*
U.S. Cl. 29—453 4 Claims



The shift indicator assembly shown discloses a steering column-mounted one-piece molded polypropylene indicator housing including two generally arcuate shaped members connected by a flexible hinge joint. One member includes a window frame portion having a slot and three side grooves to accommodate the insertion therein of a tapered lens. The other narrower member has two counterbored openings in which are mounted a pair of screws. Confinement of the screw heads, as well as the lens, occurs after the narrower member is mounted on the steering column, the screws threadedly secured to the steering column, and the wider member folded onto the other member, there being tabs and a rib formed on the latter member to "snap" into openings and past a ridge, respectively, formed on the outer member. An opening is formed on an end portion of the lens to accommodate a fiber optic light tube. A series of steps or ridges, also formed on the end portion of the lens, serves to direct the light from the end of the tube across the lens, whereupon the tapered shape of the lens causes the light to be observed through the window at a substantially constant intensity. The manually rotatable shift bowl shroud and integral pointer are located directly behind the housing, on the side away from the operator, selectively indicating through the window the various P-R-N-D-S and L indicia formed on the lens.

3,834,008

METHOD OF JOINING TWO WIRE CORDS

Jerry L. Witt; Charles F. Freeman, Sr., both of Winnsboro, and Joseph E. Douglas, Ridgeway, all of S.C., assignors to Uniroyal, Inc., New York, N.Y.

Filed Jan. 29, 1973, Ser. No. 327,261
Int. Cl. B23p *11/02*
U.S. Cl. 29—447 3 Claims

The method of joining two wire cords, particularly two wire tire cords, comprises bending a first wire cord near the end thereof. The end length of the first wire cord is disposed within a heat-shrinkable tubing and a second wire cord is bent near the end thereof. The bent regions of the cords are interlocked and the tubing is disposed over the interlocked regions of the cords. Heat is then applied to the tubing to shrink the tubing tightly to join the cords.

3,834,009
METHOD OF CONTINUOUSLY PRODUCING A SYNTHETIC RESIN COATED PIPE

Kosuke Iida, Yohkaichi; Nobuo Kanada, and Takeji Kurita, both of Mitsu-machi, all of Japan, assignors to Takiron Co., Ltd., Osaka, Japan

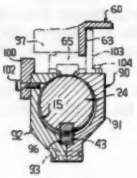
Division of Ser. No. 217,495, Jan. 13, 1972,. This application May 14, 1973, Ser. No. 359,945
Int. Cl. B23k *31/02*
U.S. Cl. 29—477 5 Claims

A synthetic resin-coated pipe suitable for supporting plants or agricultural houses is composed of an elongated rigid pipe and a synthetic resin coating tightly coated thereon having annular projections disposed at regular intervals. Said synthetic resin-coated pipe is produced by making a hollow pipe from a band steel, subjecting the pipe to chemical treatment, coating the surface of the pipe with an adhesive, and after drying the adhesive, forming thereon a synthetic resin coating having annular projections at regular intervals by means of an extruder whose cross head die includes therein a projection forming member movable reciprocably in the axial direction in the space between the die body and the top of its mandrel.

3,834,010
METHOD FOR FORMING WELDED SEAM CAN BODIES

Robert W. Wolfe, 49 W. 92nd St., Oak Lawn, Ill. 60453, and Richard E. Carlson, 8726 S. Albany, Evergreen Park, Ill. 60642

Filed Sept. 19, 1972, Ser. No. 290,325
Int. Cl. B23k *31/02*
U.S. Cl. 29—477.7 12 Claims

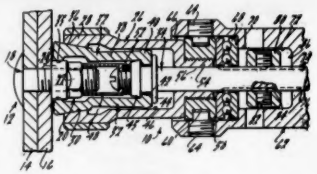


This disclosure relates to apparatus for forming can bodies one-at-a-time with a welded seam. The apparatus eliminates the prior need for preliminary tack welding and relies upon a simple set of guides for bringing the edges to be welded into the necessary overlapped relation then progressively decreasing the overlap while welding whereby a cylindrical can body may be welded notwithstanding the tendency of can bodies to assume a tapered configuration when welded without prior restraint.

3,834,011
METHOD OF SETTING A THREADED FASTENER

William E. Pinkerton, Dearborn Heights, Mich., assignor to Huck Manufacturing Company, Detroit, Mich.

Continuation of Ser. No. 112,746, Feb. 4, 1971, abandoned. This application Apr. 27, 1973, Ser. No. 355,174
Int. Cl. B21d *39/00*; B23p *11/00*
U.S. Cl. 29—517 6 Claims

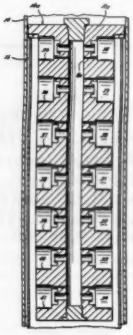


A tool for driving and setting fasteners generally of the type shown in the United States Patent to Orloff et al. U.S. Pat. No. 3,421,562 issued Jan. 14, 1969.

3,834,012
METHOD OF JOINING TELESCOPED PIPE SECTIONS

Ivo C. Pogonowski, Houston, Tex., assignor to Texaco Inc., New York, N.Y.

Division of Ser. No. 247,584, April 26, 1972. This application Sept. 28, 1973, Ser. No. 401,777
Int. Cl. B21d *39/04*
U.S. Cl. 29—523 10 Claims



At least two methods for swaging one vertical smaller tubular member internally of a larger tubular member are disclosed. One device for practicing the method comprises a cylindrical swage block for loosely fitting in the large tubular member and resting on the upper edge of the inner smaller tubular member. A plurality (preferably six) pistons and cylinders are suspended from the swage block a precise distance below the upper edge and actuatable radially from the longitudinal axis of the smaller tubular member for deforming the upper edge portion thereof against the larger tubular member for providing more working space internally of the tubular members. A modification comprises a plurality as seven axially spaced apart, parallel layers of swaging pistons and cylinders suspended from the swage block.

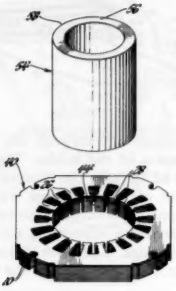
Other new devices utilizing the multiple piston and cylinder swage are a cold working pipe swage for cold-work connecting two telescopic pipe ends together, and a cold working pipe forming swage for making a new pile with anchor knobs for increased load carrying capacity and pull-out resistance.

3,834,013

METHOD FOR FORMING FINISHED BORE SIZES IN LAMINATED STATOR CORES OF DYNAMOELECTRIC MACHINES

De Witt F. Gerstle, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 18, 1971, Ser. No. 116,404
Int. Cl. H02k *15/00*
U.S. Cl. 29—596 4 Claims



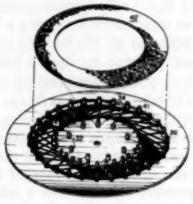
In a preferred method for forming finished bore sizes in laminated stator cores, a heat expandable cylindrical fixture is mounted in an out-of-round bore initially formed in a stack of stator laminations. The fixture and the stack of stator laminations are heated to an elevated temperature so that the fixture is thermally expanded against the sides of the bore. Radial force developed by the heated fixture deforms the bore sides into conformity with the expanded circumference of the fixture. When the stack of stator laminations is cooled to ambient temperatures, a desired stator bore size is provided therein having a finished circular configuration formed to closely controlled dimensional tolerances.

3,834,014

METHOD OF MAKING LAMINATED WIRE WOUND/ARMATURES

Robert Page Burr, and Raymond J. Keogh, both of Huntington, N.Y., assignors to Photocircuits Corporation, Glen Cove, N.Y.

Division of Ser. No. 831,556, June 9, 1969, Pat. No. 3,599,325.
This application May 8, 1972, Ser. No. 122,166
Int. Cl. H02k *15/02*
U.S. Cl. 29—598 3 Claims



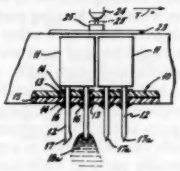
A method of making self-supporting wire wound disc armatures by laminating the radial conductor portion of the armature and by coupling the winding to the commutator and hub by means of a laminate layer. The sequence of operations is arranged so that commutator connections can conveniently be made by hot staking and the commutator can be formed from a thin sheet metal blank.

3,834,015

METHOD OF FORMING ELECTRICAL CONNECTIONS

Simon Di Renzo, Philadelphia, Pa., assignor to Philco-Ford Corporation, Blue Bell, Pa.

Filed Jan. 29, 1973, Ser. No. 327,647
Int. Cl. H01r *43/00*
U.S. Cl. 29—628 12 Claims



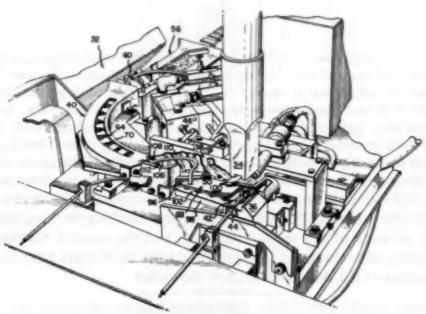
A method of manufacturing printed circuit boards of the type having a plurality of contact pins projecting from one side thereof and adapted for use as wire-wrap terminals connecting board-carried wiring to external circuits. The method includes the steps of immersing the pins and adjacent board regions in molten solder to connect the pins to the circuits carried by the board, followed by immersing the end regions of the pins in molten solder while vibrating the boards to remove excess solder from the end portions of the pins.

3,834,016

METHOD AND APPARATUS FOR DISPOSING UNASSEMBLED INSULATING HOUSINGS IN A PREDETERMINED POSITION FOR FACILITATING PLACEMENT OF ARTICLES SUCH AS ELECTRICAL CONNECTING DEVICES WITHIN SAID HOUSINGS

Phillip Eugene Loomis, Harrisburg, and Joe Pierce Morgan, Camp Hill, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed June 7, 1973, Ser. No. 367,908
Int. Cl. H01r *9/16;* H01b *17/26*
U.S. Cl. 29—630 A 9 Claims



In an automatic lead making machine which, in succession, cuts an individual insulated electrical conductor lead wire to a desired length, strips the insulation from both ends of the conductor wire, applies an electrical terminal to one of the electrically-bared ends of the conductor wire, such as a receptacle-type of terminal, and applies an insulating housing to the terminated end of the conductor wire, a guide track defines a predetermined path along which a continuous succession of unassembled insulating housings are advanced in order to bring a leading housing of the housing succession to an end of the path which is located adjacent to a wire positioning mechanism of the automatic machine which is operative to

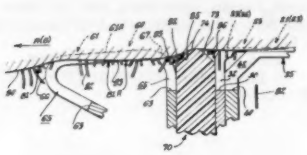
position the terminated end of an individual conductor wire between a pair of pivotally, hingedly connected housing parts of the leading housing and adjacent to an assembly station of the automatic machine which is operative to assemble the leading housing to the terminated end of the individual conductor wire. The track is comprised by static camming surfaces which, as the housing succession is advanced along the path of the track, first of all, progressively pivotally move the housing parts of each housing relative to each other from an initial open position where the housing parts are disposed approximately 180 degrees from each other to a substantially closed position where the housing parts are disposed in a substantially flush relationship to each other, secondly, progressively maintain the housing parts of each housing in the substantially closed position, and, thirdly, progressively pivotally move the housing parts of each housing relative to each other from the substantially closed position to a partially open position where the housing parts of each housing of a leading group of housings are disposed at an approximately 90 degree angular relationship to each other whereby sufficient clearance is provided between the housing parts of the leading housing, now positioned at the end of the path defined by the track, for facilitating accurate placement of the terminated end of one of the conductor wires within the leading housing by moving the wire end along any of a variety of different approach paths to the leading housing.

3,834,017

DRY SHAVER WITH HAIR GUIDING AND SKIN STRETCHING MEANS

Robert J. Tolmie, Fairfield, Conn., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Sept. 5, 1972, Ser. No. 286,343
Int. Cl. B26b *19/42*
U.S. Cl. 30—34.2 **2 Claims**



An improvement in hair guiding and skin stretching means mounted on a shaver having a cutter which contacts the user's skin as the shaver is moved in a hair shearing path across the user's skin. The improvement includes a first member, for combing hair and stretching skin, in combination with a second member, for lifting hair and stretching skin. The first and second members are connected alongside of the cutter to contact the skin ahead of the cutter as the shaver is advanced in the hair shearing path of movement across the user's skin, the first member stretching the skin and combing the long hair in advance of the second member, and the second member further stretching the skin and lifting the short hairs from the surface of the skin in advance of the cutter.

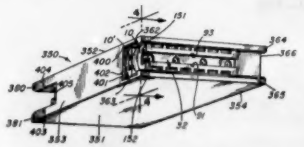
3,834,018

DISPENSING SYSTEM FOR RAZOR BLADE CARTRIDGES

Jan Dawidowicz, Fairfield, and Frank A. Ferraro, Trumbull, both of Conn., assignors to Warner-Lambert Company, Morris Plains, N.J.

Continuation-in-part of Ser. No. 258,682, June 1, 1972, Pat. No. 3,771,223, which is a continuation-in-part of Ser. No. 236,723, March 21, 1972, Pat. No. 3,785,051. This application Sept. 21, 1973, Ser. No. 399,786
Int. Cl. B26b *21/24*; A45d *27/24*
U.S. Cl. 30—40.2 **10 Claims**

The specific disclosure provides a dispensing system for razor blade cartridges comprising a dispenser, a plurality of cartridges in the dispenser, and a holder having a plurality of transverse supporting surfaces on top of a frame member for sliding engagement with surfaces extending transversely of each cartridge. The dispenser has a used cartridge storage end comprising a transverse opening between a used cartridge entrance port in one side wall and a holder exit port in the other side wall. A used cartridge is positioned in the



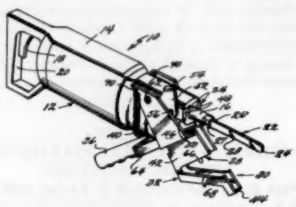
used cartridge storage end through the used cartridge entrance port by means of the holder. The frame member of the holder is moved through the transverse opening to abut a side of the used cartridge against wall surfaces forming the holder exit port. Continued movement of the holder disengages the transverse supporting surfaces of the holder from the used cartridge, and such holder surfaces are removed from the storage end through the holder exit port.

3,834,019

APPARATUS FOR CUTTING EXHAUST SYSTEM TUBES

Paul Smeltzer, Naperville, and David A. Daneck, Chicago Heights, both of Ill., assignors to Maremont Corporation, Chicago, Ill.

Filed Nov. 22, 1972, Ser. No. 308,785
Int. Cl. B26d *7/02*
U.S. Cl. 30—92 **12 Claims**

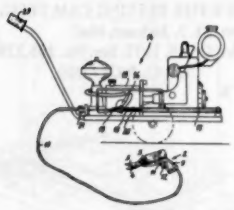


Apparatus is disclosed for cutting through exhaust system components, such as tubes of various sizes and the like, which includes a power operated portable tool of the type including a housing having a blade receiving member mounted therein for continuous reciprocating movement during the power operation of the tool, an elongated cutting blade of the sabre saw type, and an attachment including a tube engaging structure pivotally mounted on the housing on the tool for movement with respect thereto between a tube receiving position and a cutting cycle completion position, a handle for enabling the operator to effect manual movement of the structure into the tube receiving position, the structure providing a tube receiving recess therein open in a direction toward the cutting teeth and free end of the blade when the structure is moved into the tube receiving position thereof so as to position the structure in operative relation with a tube and a spring connected with the structure for effecting a resiliently biased movement thereof from the tube receiving position into the cutting cycle completion position upon the manual release of the handle with a tube disposed in operative relation between the recess and the cutting blade so that the operative movement of the blade will transversely cut the tube during the aforesaid resiliently biased movement of the structure without engagement of the handle permitting the operator to support portions of the exhaust system which are cut during the operation.

3,834,020
SHEARS

Roger Caire, Villeurbanne, France, assignor to Societe D'Exploitation D'Outillage ET Usinage De Precision Georges Froquet sigle S.E.O.U.P., Vaulx-en-Velin, Rhone, France

Filed Nov. 17, 1972, Ser. No. 307,559
Claims priority, application Nov. 19, 1971, France, 7142180
Int. Cl. B26b *15/00*
U.S. Cl. 30—228 **4 Claims**

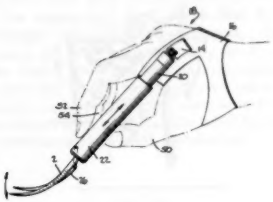


A pair of shears, scissors or the like comprise a pair of series-connected switches in its handle for controlling the energization of a solenoid valve disposed between a hydraulic servomotor and a pump supplying high-pressure fluid thereto; the pump is operated by an electric motor mounted on a carriage and the movable arm of the shears is connected via a cable protected by a sheath to the piston rod of the cylinder. The energizing circuit for the solenoid includes a wire extending along the cable sheath.

3,834,021
PRECISION INSTRUMENT SYSTEM

Robert W. White, 87-89 Columbia St., New York, N.Y. 1002, and W. Bradford De Long, 139 14th Ave., San Francisco, Calif. 94118

Filed Jan. 24, 1973, Ser. No. 326,500
Int. Cl. B26b *13/16, 13/26*
U.S. Cl. 30—232 **26 Claims**

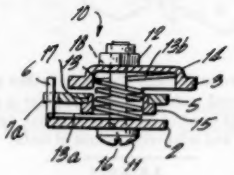


A tool system for cutting, clamping, positioning, stretching and other tool functions precisely, and particularly in deep or narrow cavities, which may be operated by one hand, and particularly by a set of intrinsic hand muscles which permit sensitive and accurate tool control without fatigue, which is especially useful in microsurgical work and miniature electronic assembly, and in which a support may be carried by the hand or its digits to receive interchangeable tools that lie between and are controlled by at least two digits of the hand.

3,834,022
LOW-PROFILE FLOATING BLADE SCISSORS OR SHEARS

John Students, Roselle Park, N.J., assignor to J. Wiss & Sons, Newark, N.J.

Filed July 12, 1973, Ser. No. 378,522
Int. Cl. B26b *13/00*
U.S. Cl. 30—261 **8 Claims**

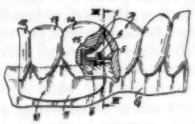


Scissors or shears having a first blade which is integral or rigidly connected to a handle, a second blade, a separate second handle, and low profile, extremely compact means for connecting the second blade to the second handle and for maintaining the first and second blades in proper cutting relationship, comprising a torsion spring mounted in a biasing bushing made of a material of a low coefficient of friction, the torsion spring being operable to impart a "dive action" to the second blade when the blades are moved to the cutting position.

3,834,023
DEVICE FOR FIXING A DENTAL PROSTHESIS

Gabriel Ernest Rene Lapeyre, Rue Cesar Campinchi, Bastia, France

Filed Feb. 26, 1973, Ser. No. 335,825
Claims priority, application France, Feb. 28, 1972, 72.6714
Int. Cl. A61c *13/22*
U.S. Cl. 32—5 **4 Claims**



The device is included into the lower portion of each false tooth placed at extremity of the prosthesis. The device is constituted by an alveole included into the prosthesis and insidely comprising a cavity holding a transverse spindle on which is hinged a resilient element having a protruding end forming a ring.

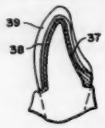
3,834,024
METHOD OF MAKING DENTAL RESTORATIONS AND PRODUCT THEREOF

Jacob Kochavi, c/o Star Dental Laboratorie, 718 El Camino, San Mateo, Calif.

Filed July 20, 1972, Ser. No. 273,498
Int. Cl. A61c *13/00*
U.S. Cl. 32—8 **3 Claims**

A restoration is made using an alloy of approximately 80 percent Ni – 20 percent Cr employing conventional casting techniques heretofore used with precious metals. After the casting has been cleaned it is heated under vacuum commencing at 1,400°–1,500°F. and increasing gradually to approximately 1,950°F. The vacuum is released and the casting cooled -- a grayish blue colored compound forming on the sur-

face. Porosities and casting defects may be conveniently repaired using ceramic gold paste. The metal may be soldered, to other metal members, whether of the same alloy or gold or



any other conventional metal. Porcelain is then applied, again using conventional techniques. The product is characterized by the very good bond of porcelain to metal, extreme dimensional accuracy and relatively low cost of metal.

3,834,025
TOOL FOR TAKING IMPRESSIONS OF TOOTHLESS JAWS

Horst Schunemann, 2953 Westrhauderfehn, Untenende 56, Germany

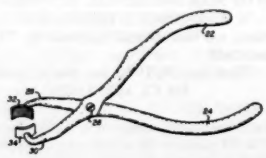
Filed Apr. 9, 1973, Ser. No. 349,310
Claims priority, application Germany, Apr. 17, 1972, 2218480
Int. Cl. A61c 9/00
U.S. Cl. 32—17 **4 Claims**

A spoon-like tool or dental tray adapted to receive material for taking an impression of a toothless upper jaw and to be inserted into the mouth of a patient is provided with raised portions in the surface contacting the jaw, and with apertures through which some of the impression material may be extruded. In this, the raised portions in the contacting surface engaging the jaw surface disposed within the alveolar ridge and acting as distance holders prevent flattening of some portions of the relatively soft alveolar ridge, socalled "tuber maxilaris" when the impression material is pressed thereagainst with the aid of the spoon-like tool, while the material extruded through the apertures acts as an anchorage preventing adhering of the impression material to the jaw and dislodgement from the spoon-like tool upon removal out of the patient's mouth. The terminology "spool-like tool" as used herein is used synonymously with the terminology "dental tray."

3,834,026
CROWN REMOVER

Michael B. Klein, 104 Oregon Ave., Bronxville, N.Y. 10708

Filed Mar. 26, 1973, Ser. No. 344,801
Int. Cl. A61c 3/16
U.S. Cl. 32—43 **10 Claims**

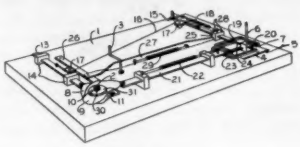


An improvement in a dental crown removing pliers having a pair of opposed arm members pivotally connected to define on one side of the pivot a pair of opposed jaws which improvement resides in a resilient deformable gripping surface on the surface of said jaws generally contoured to coincide with a side surface of a crown, said resilient deformable gripping surface adapted to hold at least one jaw of said pliers against the surface of a crown; a method of removing a crown by gripping the same in the jaws of a dental crown removing pliers which has on a surface of at least one jaw a resilient deformable gripping surface.

3,834,027
DEVICE FOR TESTING CAM DESIGNS

Donald J. Amelon, Rt. 3, Jackson, Mo.

Filed Oct. 5, 1972, Ser. No. 295,229
Int. Cl. B43l 11/00
U.S. Cl. 33—27 K **2 Claims**



The disclosure relates to a device for testing two cam designs simultaneously, one cam designed for movement of a follower in the x axis and one designed for movement of a follower in the y axis. A spindle is provided for mounting sheet metal plate cams in the contour of the cam designs; associated mechanisms control the movement of a pen to write or draw a one line figure on a stiff card. The figure drawn may be compared directly to the one line figure which was the intended pattern of pen movement from which the two cams were designed.

3,834,028
APPARATUS TO DRAW AN OVAL

Jujiro Okada, No. 69, Chodo-1-Chrome, Higashi-Osaka and Isamu Satoo, No. 11/17, Fukae-Minami-2-Chome, Higashinari-ku, Osaka, both of Japan

Filed Sept. 18, 1973, Ser. No. 398,451
Int. Cl. B43l 11/04
U.S. Cl. 33—30 G **1 Claim**

An apparatus to draw an oval is disclosed. The device is characterized by mounting on a stand a rotary plate which turns horizontally and which is provided with a pointer to show its center. A rotary rod is coupled to the rotary plate for movement in the same direction as the latter at a rate of twice the rotation of the plate and positioned beneath the plate such that the rotary rod can move freely in the vertical direction to the center of the rotary plate. A drawing tool holder is positioned at the bottom of the rotary rod such that the degree of eccentricity of said holder from the center of the rotary rod can be adjusted freely.

3,834,029

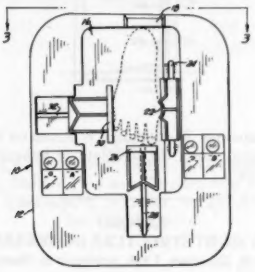
DIGITAL FOOT MEASURING INSTRUMENT

Ariel Stiebel, Bloomfield Hills, Mich., assignor to Radex Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 133,825, April 14, 1971, Pat. No. 3,757,418. This application Feb. 16, 1973, Ser. No. 333,073

Int. Cl. A43d *1/02*

U.S. Cl. 33—3 C 14 Claims



An instrument for measuring a human foot and providing a visual display of an appropriate shoe size fitting such foot. The instrument comprises a housing with a cover on which the foot is placed with its heel in engagement with a stationary abutment. A first longitudinally movable abutment is manually engaged with the ball of the foot, a second longitudinally movable abutment is manually engaged with the foremost projecting toe of the foot and a third laterally movable abutment is manually engaged with the side of the foot. A pair of shoe size charts are each fastened to the periphery of one of a pair of drum members. One of the drum members, mounted in the instrument housing below the cover, is longitudinally movable as a result of the displacement of the toe end engaging abutment and the other is longitudinally movable as a result of the displacement of the ball engagement abutment. Both drum members are rotatable in unison as a result of the lateral movement of the foot side engaging abutment. The charts bear shoe size indicia of increasing length size along their longitudinal axis and of the same shoe length size but of increasing width along their lateral axes, except that the longitudinal axis scale of the chart on the drum member longitudinally displaced by the ball engaging abutment is contracted relative to the longitudinal axis scale of the chart on the other drum member. The appropriate shoe size is read by viewing and sighting through a pair of windows disposed through the instrument cover for reading a single shoe size from each of the charts. The larger shoe size display corresponds to an appropriate shoe size for the foot. At least a third chart bearing drum member, corresponding for example to foot arch length sizes, may be provided, such that the other foot of the person may also be measured and sized, if so desired.

3,834,030

CLOSET TO PIN MEASURER

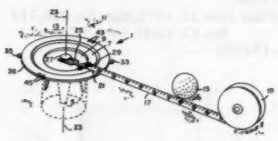
Casper H. Hanson, 44 Pasatiemp Dr., Santa Cruz, Calif. 95061

Filed June 21, 1973, Ser. No. 372,211

Int. Cl. G01b *3/10*

U.S. Cl. 33—138 4 Claims

The invention is a measuring device for determining how close to the pin that an individual golfer has driven off of the tee in hole-in-one competition on a par three hole. The measuring device includes a post which fits snugly within the golf hole, a shelf attached atop the post perpendicularly to the axis of the post, the shelf extending out over the grass so that use of the device will not damage the grass, a lid adapted to fit atop



the shelf to protect the reel tape from dampness and a reel tape attached to a point in the shelf in line with the axis of the post.

3,834,031

APPARATUS FOR MEASURING THE THICKNESS OF PAPER SHEET STACKS OR THE LIKE

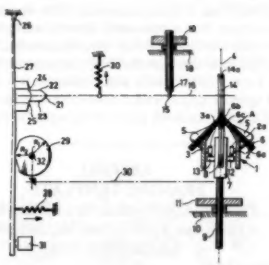
Hans Muller, Zofingen, Switzerland, assignor to Grapha Maschinenfabrik Hans Muller AG, Zofingen, Switzerland

Filed May 11, 1972, Ser. No. 252,417

Claims priority, application Switzerland, May 21, 1971, 7450/71

Int. Cl. G01b *5/06*; B07c *1/10, 5/04*

U.S. Cl. 33—174 R 14 Claims



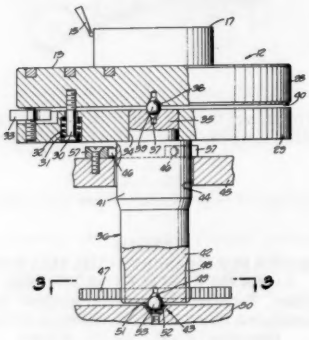
Apparatus for measuring the thickness of V-shaped stacks of paper sheets which are transported at equal intervals along the upper stretch of an endless chain has two scanning wheels one of which is located below and the other of which is located above the path for the stacks. The upper scanning wheel is lifted by successive stacks so that its position during engagement with a stack is indicative of the thickness of the thus engaged stack. The upper scanning wheel controls the position of a plate which can be received between two blades of a lever. The lever is pivotable by a cam which is driven in synchronism with the chain so that it allows the lever to assume a predetermined angular position when the scanning wheels engage a stack and when the thus engaged stack is of satisfactory thickness. Otherwise, the plate extends into the path of movement of one of the blades and prevents the lever from assuming its predetermined position. When the lever is free to assume its predetermined position, it actuates a switch or another suitable control device serving to regulate the operation of a processing machine for satisfactory stacks which have advanced beyond the scanning wheels. At least one of the scanning wheels, a balance beam for the plate and/or at least one of the blades on the lever is adjustable to allow for changes in setup of the measuring apparatus and/or to select the range of satisfactory thicknesses of tested stacks.

3,834,032

APPARATUS FOR MEASURING ROUNDNESS, CONCENTRICITY, FLATNESS AND AXIS SQUARENESS

Kauno E. Sihvonen, Arcadia, Calif., assignor to Gould, Inc., Cleveland, Ohio

Filed June 21, 1972, Ser. No. 264,719
Int. Cl. G01b *5/20, 5/22*
U.S. Cl. 33—174 TD **9 Claims**



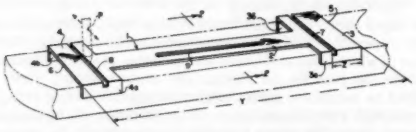
A work surface is supported at the upper end of a vertical spindle. The lower spindle end includes a conical opening within which a ball is received with portions thereof extending outwardly from the spindle end surface. A mounting base has a further conical opening provided with a low frictional seat into which the ball is also received. The upper spindle marginal end portion has a precisely formed circumferential surface such that the axis of this circumferential surface coincides with the axis through the ball center to a high degree of accuracy. Low friction pads are arranged in contacting relation to the spindle upper end circumferential surface. Tangential drive is applied to both sides of the spindle simultaneously.

3,834,033

FRAMING TEMPLATE

Richard L. Pinkard, 316 Ferndale Dr., Collinsville, Va. 24078

Filed Apr. 6, 1973, Ser. No. 348,694
Int. Cl. G01b *3/30*
U.S. Cl. 33—174 G **7 Claims**



A simple one-piece item of sheet metal or plastic, constructed to facilitate the emplacement and proper spacing and collocation of studs, joists, rafters and like elements in the construction of a building.

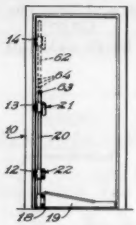
3,834,034

METHOD AND APPARATUS FOR CUTTING DOORS

John E. Berquist, P.O. Box 4632, Santa Barbara, Calif. 93101

Filed Aug. 10, 1972, Ser. No. 279,476
Int. Cl. G01b *3/14;* **E04f** *21/00*
U.S. Cl. 33—194 **9 Claims**

An apparatus for use in marking doors for cutting is provided, usually used for shortening previously hung doors to swing freely over newly applied carpeting and the like. The door is removed, and an upright is suspended from the fixed hinge portions on the door frame, and adjusted until a horizontal template at the bottom of the standard swings free-



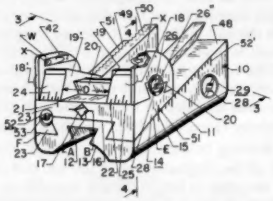
ly over the carpeting. The standard is placed on the door and the door marked along the template to indicate where the door is to be cut.

3,834,035

GUN SIGHT STRUCTURE IN FIREARMS

Alvin S. Merrill, Riverton, Utah, assignor to Moroni Corporation, Salt Lake City, Utah

Filed May 8, 1972, Ser. No. 250,983
Int. Cl. F41g *1/08, 1/16, 1/32*
U.S. Cl. 33—251 **3 Claims**



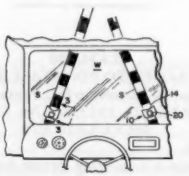
Gun sight structure for firearms having sight-gap and sight-elevation adjustments, with miscellaneous, accommodating, adjustment, and sight pattern structures. The sight includes an inclined ramp feature wherein the sight may be raised and lowered in an appropriate manner. Threaded means accommodate sight-centering as to sight-gap and equal distance of sight opening. Adjustment means is also provided.

3,834,036

LANE STRIPE STEERING GUIDE

Francis M. Scarritt, Sr., 1338 Pork St. North, St. Petersburg, Fla. 33710

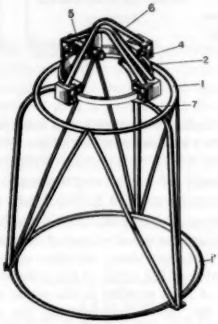
Filed Nov. 13, 1972, Ser. No. 305,988
Int. Cl. G01c *21/04*
U.S. Cl. 33—264 **3 Claims**



The invention provides visual guide means for use on vehicles, namely, sighting members in the line of view between the

driver and painted lane stripes by which a driver can with assurance maintain the vehicle properly within a lane. Such sighting members are similar to open top target sights but of much larger dimension and provided with attachment means to be secured to forwardly extending portions of a vehicle, such as hood or fenders, or to the windshield, depending on type of vehicle. The sighting members are fixed in position so that a driver can sight across them from his normal driving position to view lane stripes at a point ahead of the vehicle so that at normal road speeds he has sufficient time to control steering to maintain the vehicle safely between stripes, or between a stripe and the edge of a road.

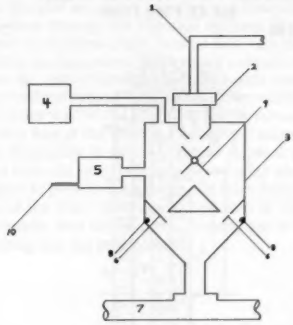
3,834,037
DEVICE FOR MONITORING EARTHMOVING
Paul C. Daly, 3055 N. First Ave., Tucson, Ariz. 85719
Filed Sept. 8, 1972, Ser. No. 287,476
Int. Cl. G01c *15/12*
U.S. Cl. 33—292 **1 Claim**



An engineer's telescope is mounted on a carriage which rolls on a circular track. The track is supported by adjusting nuts on studs fastened to the top of a stand which rests on the ground. The operator sits inside the stand. The track may be leveled or tilted, and the operator can position the telescope radially 360°. By means of a wireless transmitter the operator can actuate a receiver mounted on a land leveling or grading machine to adjust the grading blades.

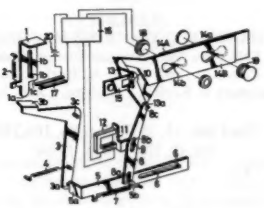
3,834,038
METHOD FOR DRYING MOLDABLE RESINS
Robert J. Janda, Sterling, Va., assignor to Gammaflux, Inc., Reston, Va.
Filed Sept. 14, 1972, Ser. No. 288,941
Int. Cl. F26b *3/32*
U.S. Cl. 34—1 **8 Claims**

A method of drying plastic resins through the use of microwave energy in a partial vacuum is disclosed. The method is particularly useful for drying plastic resins which are to be molded by an injection molding process. Further, a



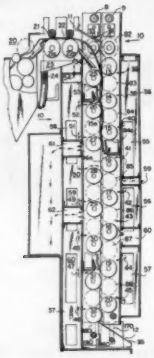
particular embodiment of apparatus which provides the microwave-partial vacuum drying is disclosed herein.

3,834,039
AUTOMATIC DIAPHRAGM SETTING DEVICE FOR CAMERA
Hideo Takeuchi, Kozakai, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Filed July 26, 1973, Ser. No. 383,028
Claims priority, application Japan, Aug. 12, 1972, 47-94996
Int. Cl. G03b *9/00, 9/62*
U.S. Cl. 354—42 **3 Claims**



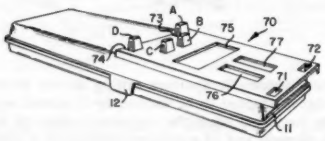
A camera automatic aperture setting device includes an electromagnet adapted to be excited by a release operation and to be deexcited when the resistance values of the light receptive element and of a resistor included in a controlling electric ciruit are balanced, an attraction member attracted and held by excitement of the electromagnet, a diaphragm adjusting member adapted to be operated after the electric circuit has been closed by release operation and to operate a diaphragm opening member, and a member that imparts friction torque to the operation of the diaphragm opening member. The adjusting member rotates around a first pivot held in fixed position by the attraction member and operates the diaphragm opening member while the magnet is excited, and rotates around a second pivot that connects the diaphragm opening member to the diaphragm adjusting member when the magnet is deexcited, and determines a diaphragm aperture upon the deexcitement of the magnet.

3,834,040
DRYER FOR PHOTOGRAPHIC FILM
Harold D. Russell, Clinton, N.Y., and James G. Lin, Springfield, Va., assignors to LogEtronics Inc., Springfield, Va.
Filed Apr. 19, 1973, Ser. No. 352,847
Int. Cl. F26b *13/00*
U.S. Cl. 34—160 **7 Claims**



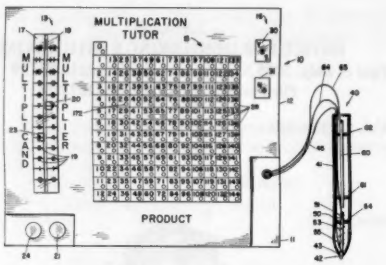
A dryer for photosensitive material using both convection and conduction is disclosed having a bank of rollers aligned in coplanar axes on each side of the material path. The rollers are roughened to provide a plurality of surfaces for removing surface moisture from the material being dried. A plenum is arranged on each side of said material path to define a plurality of slots that direct heated and pressurized air against the rollers in a tangential plane to heat and dry the leading circumference of each of the rollers just before it contacts the material. The dryer also contains a plurality of floating finger guides immediately adjacent said rollers for removing any material being transported which may attempt to adhere to the rollers.

3,834,041
HAND HELD TEACHING MACHINE
Richard B. Ball, Palo Alto; Tuygan Gurler, Oakland; Carl J. Clement, Palo Alto, and David A. Horine, Los Altos, all of Calif., assignors to Enrich, Palo Alto, Calif., by said Ball & Gurler
Filed Jan. 15, 1971, Ser. No. 106,750
Int. Cl. G09b *3/06, 17/04*
U.S. Cl. 35—9 A **4 Claims**



A hand held manually operable teaching machine is disclosed herein comprising a replaceable cartridge containing a web, typically an endless or Z-folded web and a plurality of manually operated web-advancing means. The web is used for displaying frames of material to which a response is intended. Each frame of material on the web is provided with a web advancing hole at a predetermined location on a line transverse to the web in association with an appropriate one of several possible responses displayed with the material. The advancement of a pre-determined one of the web-advancing means will engage the hole associated with a correct response and advance the web for presenting another frame of material, thus indicating a correct response had been made by the operator. In an alternative mode, an increase in the number of frames of material for an equivalent length of webbing may be obtained with a mask attached to the machine which provides for split frame operation. The same mask may be reversed on the machine for tachistoscope operation to improve recognition and reading speed.

3,834,042
COMPUTATION DEVICE
James L. Henry, 3010 S. 74 East Ave., Tulsa, Okla. 74129
Filed Sept. 7, 1973, Ser. No. 395,222
Int. Cl. G09b *7/10*
U.S. Cl. 35—9 C **9 Claims**

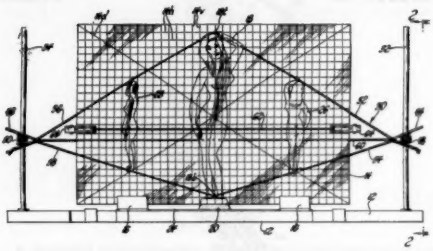


Apparatus for indicating correct and incorrect solutions to an equation of two independent variables includes a printed circuit board on which electrically conducting strips are formed in a family of curves representing solutions to a desired equation, such as $xy = Z$. The family of curves is arranged in a manner whereby the distance along one edge of the board represents the value of one of the independent variables, and the distance along another edge of the board represents the value of the other of the independent variables, the intersection of lines parallel to the edges of the board intersecting over the curve representing the solution to the equation of the two variables. The board is mounted between upper and lower frames, the lower frame carrying an electrical contactor which is movable in the two directions of the independent variables to contact the electrically conducting solution curve and impart an electric potential to it. Each of the solution curves is connected to an electrically conducting possible solution member, displayed on the top panel. A test probe is connected to a relay switch to energize the relay when the test probe is brought into contact with the proper solution member to which the voltage is conducted from the solution curve. The test probe contains a switch, operable by pressure on the probe to energize a selected one of two solution indicating lamps, the incorrect lamp being ordinarily selected and the correct answer lamp being selected by positive potential detected by the probe which the relay energizes.

3,834,043
ART INSTRUCTING APPARATUS
C. Elwood Summers, 8325 Riverland Dr., Sterling Heights, Mich. 48078
Filed Aug. 3, 1973, Ser. No. 385,506
Int. Cl. G09b *11/00*
U.S. Cl. 35—26 **18 Claims**

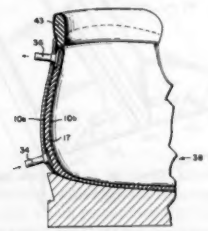
This art instructing apparatus allows the art student to compose his own three dimensional scene for reproduction in two dimensional form. The apparatus affords particular assistance to the student in the handling of perspective views. The rate at which the three dimensional scene recedes from the

foreground to vanishing points in the background is graphically defined by four elastic cords attached to a pair of spring clips carried by two vertical rods at the rear of the apparatus and to a figure model, which serves as a foreground art object. An elastic cord extends from each spring clip to the top of the foreground figure model, and an elastic cord extends from each spring clip to the bottom of the foreground figure model. The spring clips can be vertically positioned on the rods to set the vertical position of the horizon relative to the foreground figure model. The horizontal separation of the vertical rods is also adjustable to adjust the rate at which the perspective lines, defined by the four elastic cords, approach the vanishing



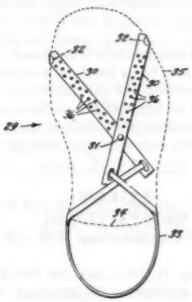
points. Additional figure models are provided for attachment to the elastic cords such that a three dimensional scene, including both foreground and background figures, can be composed. A transparent grid is provided at the front of the apparatus to assist the student in reproducing the proportions of the various models. The foreground figure model stands on a magnetic base or pedestal which can be selectively positioned on the base of the apparatus to provide the art student maximum flexibility in composing the three dimensional scenes he wishes to reproduce. This art instructing apparatus is designed for easy disassembly so it can be conveniently and compactly transported.

3,834,044
METHOD OF FOAMING SKI BOOTS
Robert R. McAusland, Seattle, and John M. Powell, Federal Way, both of Wash., assignors to Anderson & Thompson Ski Co., Inc., Seattle, Wash.
Filed Mar. 16, 1970, Ser. No. 19,914
Int. Cl. A43b *00/00*
U.S. Cl. 36—2.5 AL **7 Claims**



A double-wall liner of flexible material is put on the foot of the wearer or a mandrel corresponding to the foot of the wearer, the outer wall of the liner having therein an injection opening for an uncured foaming material and one or more vent openings. The mandrel or wearer's foot, with the liner thereon, is then inserted into a ski boot having one or more openings corresponding to the openings in the outer wall of the liner. The liner is keyed in position in the boot. The boot is then laced or buckled. An uncured resinous material and a catalyst therefor are mixed together and immediately injected into the liner through the injection opening. The foaming gas generated by reaction of the catalyst and resin foams the resin to produce an elastomeric foam which expands to fill the area between the walls of the liner and causes the outer wall of the liner to conform substantially to the inner surface of the boot and the inner wall of the liner to conform substantially to the mandrel or foot of the wearer. The foamed material is allowed to cure adequately in the liner before removal of the foot or mandrel from the liner. Stitching is provided along the instep of the liner to prevent the elastomeric foam from entering that portion of the liner, allowing that portion of the liner to expand laterally, and allowing the foaming gas to vent through the stitching into the atmosphere.

3,834,045
SNOW AND ICE ANTI-SKID DEVICES FOR SHOES
Clarence J. Crigger, and Ralph S. Arbogast, both of P.O. Box 574, Rittman, Ohio 44270
Filed Nov. 15, 1973, Ser. No. 415,934
Int. Cl. A43b *3/10*
U.S. Cl. 36—7.6 **1 Claim**

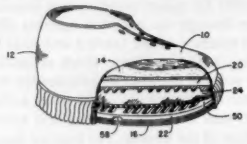


A novel cleat securable to the underside of a shoe in order that a person wearing the same can walk on slippery surfaces without slipping; the cleat in one form of the invention consisting of a pair of metal bars connected pivotally together at their centers, one end of the bars being bent to clamp around a shoe sole, and the other end being connected to an elastic band extending around the shoe heel, the underside of the bars having projections for frictionally engaging a walking surface; and the invention in another design consisting of a rotatable roller having a row of projections that are rotatable between a utility and retracted position.

3,834,046
SHOE SOLE STRUCTURE
Donald M. Fowler, Rt. 5, Box 844, Golden, Colo. 80401
Filed Apr. 9, 1973, Ser. No. 348,901
Int. Cl. A43b *13/18*
U.S. Cl. 36—28 **16 Claims**

A cushioning structure for footwear is interposed between the insole of the shoe and the ground-engaging sole and in-

cludes upper and lower sheets having a plurality of complementary and aligned protrusions and openings therebetween, the sheets being separated by an elastic diaphragm which will



yieldingly resist the movement of the protrusions into the openings when the sole is compressed against the upper part of the shoe.

3,834,047

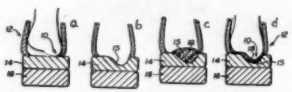
SHOE CONSTRUCTION TO PROVIDE BUILT-IN SHOCK ABSORBER AND REDUCE EXCESSIVE HEEL WEAR

Abraham Wiltse Schenker, 303 66th St., New York, N.Y. 10023

Filed Sept. 21, 1973, Ser. No. 399,649

Int. Cl. A43b *31/32*

U.S. Cl. 36—37 **9 Claims**



An improved shoe construction is disclosed wherein the top surface of the inner sole has a local excavation in its posterolateral aspect to accommodate the calcaneal projection. The local excavation can be filled with a resilient material such as rubber which can be flush with the top surface of the inner sole over the excavated area or project thereabove.

3,834,048

SHOE FASTENING

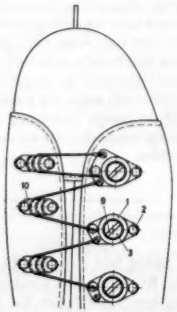
Wilhelm Maurer, Wehntalerstrasse 536 CH-8000, Zurich, Switzerland

Filed Aug. 31, 1973, Ser. No. 393,420

Claims priority, application Switzerland, Oct. 9, 1972, 14732/72

Int. Cl. A43b *11/00*; **A43c** *11/00*

U.S. Cl. 36—50 **6 Claims**



A shoe fastening for a ski boot or the like comprises a housing, a body mounted for unidirectional rotation in the housing and a serration coupling between the housing and the unidirectionally rotatable body for holding the body against rotation in the opposite direction while permitting the unidirectional rotation thereof. A shoe lace has one end affixed to the rotatable body and the other end affixed to the housing, the lace being looped about a counter-support arranged to receive the shoe lace from the rotatable body.

3,834,049

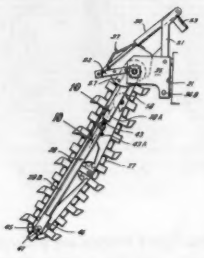
TRENCHING ATTACHMENT FOR A TRACTOR OR THE LIKE

Sam Bond, P.O. Box 40117, Houston, Tex. 77040

Filed Dec. 7, 1972, Ser. No. 312,851

Int. Cl. E02f *5/06*, *3/08*

U.S. Cl. 37—86 **8 Claims**



A trenching attachment comprising a boom to be mounted on the rear end of a tractor, an endless chain having digging elements thereon carried by the boom, an actuator for moving the boom between transport and digging positions, and a belt for connecting a drive shaft for the chain to a power take-off shaft on the tractor.

3,834,050

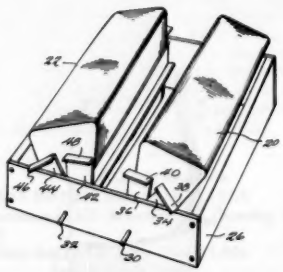
PIVOT FILE WITH MULTIPLE ROWS OF FILE CARDS

Richard P. Scholfield, Peekskill, N.Y., assignor to Wheeldex Manufacturing Co. Inc., Peekskill, N.Y.

Filed Jan. 16, 1973, Ser. No. 324,143

Int. Cl. G09f *11/06*

U.S. Cl. 40—67 **3 Claims**



A multiple row file with a number of rows of flat file cards pivotably mounted in a tray with each row bounded by pivotably mounted guide members.

3,834,051
ANAMORPHIC GREETING CARDS AND OTHER STRUCTURAL GRAPHIC PIECES

Clarence A. Barnes, Jr., New York, N.Y., and Carl T. Chadsey, Jr., Greenwich, Conn., assignors to Reflectomorphics Inc., New York, N.Y.

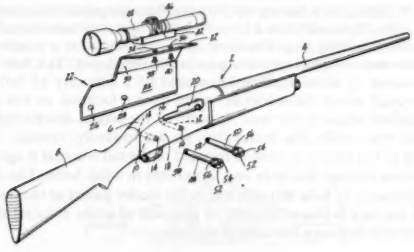
Filed Nov. 12, 1973, Ser. No. 414,850
Int. Cl. G09f 1/00
U.S. Cl. 40—124.1 12 Claims

A distorted or anamorphic image is placed on one panel of a foldable display card assembly and viewed as a normal image on curved collapsible mirror reflector supported by the other panels comprising the said card.

3,834,052
MOUNT FOR GUNSIGHT

William F. Steck, III, El Paso, Tex., assignor to W. R. Weaver, Company, El Paso, Tex.

Filed Sept. 21, 1973, Ser. No. 399,678
Int. Cl. F41g 1/38
U.S. Cl. 42—1 S 6 Claims

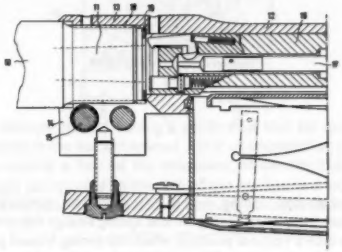


A mount for securing a gunsight above the top of the receiver of a firearm, which mount is secured to the receiver by at least one pin which passes laterally through the receiver side walls upon which pin at least a portion of the action of the firearm is also mounted within the receiver. The mount includes a first portion adjacent the sidewall of the receiver which first portion receives the pin, and a second portion overlying the top wall of the receiver, on which second portion the gunsight is mounted.

3,834,053
METHODS AND APPARATUS FOR DETACHABLY ASSEMBLING THE BARREL OF A FIREARM

Heinz Bielfeldt, deceased, late of Eckernforde, Germany; by Gerlinde Bielfeldt; by Karsten Bielfeldt, both of Eckernforde, and by Christiane Diehl, Kiel, all of Germany (heirs), assignors to J. P. Sauer & Sohn GmbH, Eckernforde, Germany

Filed Apr. 26, 1973, Ser. No. 354,773
Claims priority, application Germany, July 21, 1972, 2236001
Int. Cl. F41c 21/00
U.S. Cl. 42—75 B 9 Claims

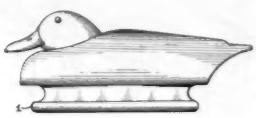


A firearm includes a slit receiver socket for detachably receiving a barrel, and a spacer element disposed between the rear of the barrel and the end of the socket to define the rearmost position of the barrel. The spacer element may include a plurality of discs which are adhered together. Discs may be added to or removed from the spacer element to adjust the size thereof.

3,834,054
DECOY ANCHOR STORAGE

George W. Gentry, 6034 N. 32nd Ave., Phoenix, Ariz. 85017, and Robert W. Jepson, 3109 N. 64th Dr., Phoenix, Ariz. 85033

Filed Apr. 23, 1973, Ser. No. 353,383
Int. Cl. A01m 31/06
U.S. Cl. 43—3 2 Claims



An anchor with provision for attachment to an elongated and bulbous keel of a duck decoy consisting of a weight with wire or strip appendages which have a configuration corresponding to the outer configuration of the decoy keel. The appendages are resilient or are resiliently biased to grip the keel when the weight is applied to the keel in an upward motion.

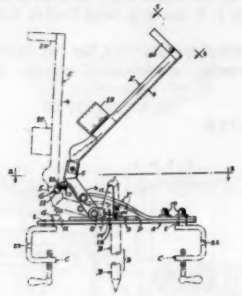
3,834,055
FISHING POLE HOLDER AND CATCHING DEVICE

Umberto Dal Bianco, 1051 65th St., Oakland, Calif. 94621

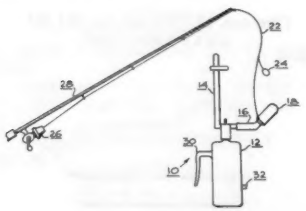
Filed Aug. 28, 1973, Ser. No. 392,258
Int. Cl. A01k 97/10
U.S. Cl. 43—15 4 Claims

A fishing pole holder and catching device which may be removably clamped to a supporting member in a boat or the device has a spike that may be driven into the ground for sup-

porting the device. The device has an arm for holding a fishing rod and the arm is swingably secured to a base. Novel adjustable means holds the arm and fish pole in an operative and inclined position preparatory to catching a fish. This adjustable means includes a spring biased pawl and a ratchet for holding the arm and fishing rod in the operative position into which they have been swung. A leaf spring swings the arm and fish pole into a vertical position when the spring biased pawl is automatically freed from the ratchet when there is a pull on the fish line and pole due to a fish being caught by the fish hook.



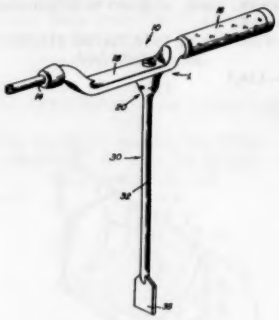
3,834,056
POWERED LINE CASTING ARRANGEMENT
Ernest A. Filippi, 18776 Kenya St., Northridge, Calif. 91324 and Matthew S. Smith, 4400 Sarah St. No. 29, Burbank, Calif. 91505
Filed Mar. 23, 1972, Ser. No. 237,372
Int. Cl. A01k *91/02*
U.S. Cl. 43—19 **39 Claims**



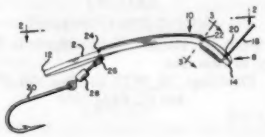
A powered line casting arrangement utilizing a pressurized fluid to launch a projectile to which the line to be cast is attached.

3,834,057
FISHING ROD HOLDER
Edward F. Jansa, 2402 S. 5th St., Omaha, Nebr. 68108
Filed Mar. 13, 1973, Ser. No. 340,897
Int. Cl. A01k *97/10*
U.S. Cl. 43—21.2 **13 Claims**

A fishing rod holder having a standard and an insert mountable on a fishing rod for selectively engaging the standard. The insert is preferably in the shape of a hyperboloid of one sheet having parallel bases of different areas, and is secured on a reel mounting portion of the handle of a fishing rod by a bolt passing through an opening provided in the handle portion and engaging a threaded hole in the insert. A socket is provided on the standard for matingly receiving the insert, the base of smallest area first; the insert and socket may be advantageously provided with longitudinally extending splines and grooves, respectively, for preventing sway while permitting a rod to be rigidly held extending in any desired direction.



3,834,058
FISHING LURE
Jack R. Gaunt, 1150 Tattersall Dr., Victoria, British Columbia, Canada
Filed May 3, 1973, Ser. No. 356,780
Int. Cl. A01k *85/00*
U.S. Cl. 43—42.32 **3 Claims**

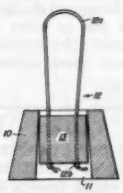


A fishing lure having a relatively flat elongated main body portion, tapered from a broad leading end to a substantially pointed trailing end. The body of the lure includes a scooped nose and a slight twist along its longitudinal axis. The lure is secured to a fishing line by means of a plurality of holes through which the leader is woven from a location on top of the lure adjacent the nose, forward of the scoop, downwardly and rearwardly, the leader then passes upwardly, remains on top of the lure to a position forward of the tail whereat it again passes through the body and terminates in a fish hook. The attachment, or hole through which the leader passes at the nose of the lure is placed slightly on one side of a line dividing the distance between the sides of the lure.

3,834,059
RELEASABLE SINKER USING WATER-SOLUBLE MATERIAL AND RESILIENT ATTACHING MEANS
Vern C. Overstreet, Hollywood, Calif., assignor to Marguerite M. Haynes, Los Angeles, Calif.
Filed Nov. 9, 1972, Ser. No. 303,821
Int. Cl. A01k *95/00*
U.S. Cl. 43—43.12 **5 Claims**

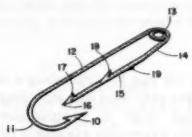
A sinker for fishing lines comprises a weight and water-soluble means for attaching the weight to a fishing line, so that, when the sinker is placed in water, the water-soluble means

dissolves and releases the weight. A preferred embodiment includes a weight cast to shape from Portland cement, and a



releasible attachment loop tightly wedged into a passage through the weight by means of a water-soluble wedge, e.g., a wedge-shaped lump of sugar.

3,834,060
FISH HOOK
Leonard Wagenknecht, P.O. Box 282, Sterling, Ill. 61081
Filed Feb. 21, 1973, Ser. No. 334,477
Int. Cl. A01k *83/06*
U.S. Cl. 43—44.8 **8 Claims**

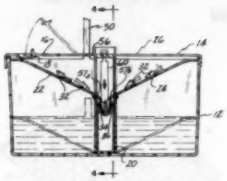


A fish hook member composed of a single wire strand including a hook end and a loop end and an elongated shank extending between the hook of the hook end and loop. A second shank extends from the loop alongside but spaced from the aforementioned shank and terminating in a barbed end generally at the mouth of the hook between the elongated shank and hook.

3,834,061
LEADER CONNECTOR
Gerald B. Klein, 13451 Stuart Ct., Broomfield, Colo. 80020
Continuation-in-part of Ser. No. 128,015, March 25, 1971, Pat. No. 3,717,907. This application Aug. 3, 1972, Ser. No. 277,756The portion of the term of this patent subsequent to Feb. 27, 1990, has been disclaimed.
Int. Cl. F16g *11/00, 11/02*
U.S. Cl. 43—44.9 **5 Claims**

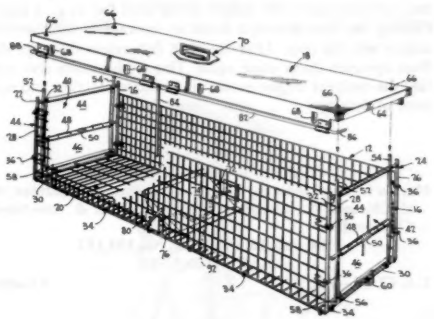
A connector or a link for joining a leader to a fly line is formed as a small cigar or like shaped member. A passageway opening at each end receives the end of the line and the end of the leader. A transverse hole at the center intersects the passageways from the ends to provide opposing side openings. The end of the line and the end of the leader are threaded through their passageways to project from the side openings. They are then knotted and the knots are pulled back into the side opening to complete the connection.

3,834,062
MINNOW BUCKET WITH MOVABLE MEANS FOR GRASPING AND HOLDING BAIT
Walter H. Nalepka, 33648 Michele St., Livonia, Mich. 48150
Filed July 21, 1972, Ser. No. 274,105
Int. Cl. A01k *97/04*
U.S. Cl. 43—56 **9 Claims**



A minnow bucket having a perforated wall for moving the minnows in the bucket toward a pair of cooperating jaws. The jaws receive a few of the minnows, which are then passed through an opening in the top of the bucket to a position in which the user can pass a hook through an individual minnow.

3,834,063
LIVE ANIMAL TRAP
Anthony J. Souza, Lancaster, and Harlan W. Martin, New Holland, both of Pa., assignors to Woodstream Corporation, Lititz, Pa.
Filed May 9, 1972, Ser. No. 251,790
Int. Cl. A01m *23/02*
U.S. Cl. 43—61 **12 Claims**



A novel live animal trap is disclosed of the type comprising a box-like cage having opposed substantially parallel pairs of sides, a separate removable top and a floor, with a passage for entrance and egress preferably in each end of the cage. A foldable door is disposed in each passage, the door being movable between a folded or collapsed configuration to open the passage and an unfolded configuration to close the associated passage with the door normally being biased or urged into the unfolded configuration. A triggering device is disposed within the cage and is connected to linkage means, disposed exteriorly of the cage, the linkage means being operatively coupled to each door. When the triggering device is in a "cocked" or set position, the linkage means can selectively retain each door in a folded configuration to keep the associated passage open. When the triggering device is tripped such as by an animal entering into the cage, each retained door is released through the linkage means whereby the door quickly unfolds and snaps shut so as to trap the animal. The

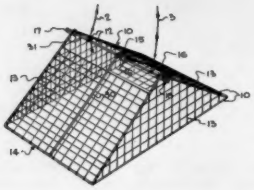
novel trap of the instant invention is constructed in a "knock-down" manner whereby the cage, as a whole, can be collapsed upon removal of the top to facilitate transportation thereof.

3,834,064

QUICKLY-COLLAPSIBLE SHELL FISH TRAP

Richard T. Lane, P.O. Box 5, Des Allemands, La. 70030

Filed Jan. 29, 1973, Ser. No. 327,494
Int. Cl. A01k *69/08*
U.S. Cl. 43—100 **8 Claims**



A triangularly configured, quickly-collapsible shell fish trap using rigid, peripherally located support rods forming rectangular perimeters for attaching netting mesh thereto, the support rods being formed with loops or hinges at the apex of the triangle for rotation about an axis-rod located laterally at the apex. One of the support rods is provided with a resilient finger latch or trigger formed by a reverse loop which engages an oppositely disposed support rod, thereby providing an easily disengageable means to permit the trap to be placed quickly in use. In one embodiment an open, non-mesh area acts as the entrance for the shell fish.

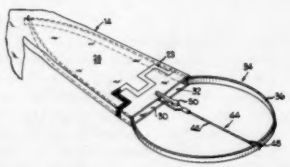
A modification of the basic trap uses one or two float operated doors which are opened when a shell fish approaches the entrance due to the weight of the shell fish (e.g., a crab) causing the float actuated doors to separate to form an entrance into the trap. After the shell fish enters the trap, the float operated doors close again. This modification also utilizes the resilient trigger means to facilitate erection and collapse of the trap.

3,834,065

FABRIC DECORATING KIT

Marvin I. Glass; Bette M. Kaelin, and Allison W. Katzman, all of Chicago, Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Feb. 16, 1973, Ser. No. 333,182
Int. Cl. A63h *33/00*
U.S. Cl. 46—1 R **5 Claims**



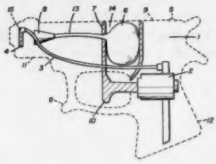
A clothing kit for dolls which includes articles of doll clothing made of fabric, the fabric having a preprinted design thereon so that the clothes can be colored within or along the design according to taste. The articles of clothing have snap-on decorative trim and accessories. Also included in the kit is a fabric stretcher which generally includes a flexible band which forms a generally circular loop. The loop is self-biased toward a circular configuration and has a diameter greater than the greatest distance between interior opposing surfaces of a partially closed article of clothing. When the band is resiliently forced into an article of doll clothing, the fabric is stretched outwardly around the band holding the fabric such that opposite sides of the fabric are spaced from each other. When the fabric is so held around the band, the fabric may be colored by an ink felt pen or other appropriate marking member without the liquid color running from one sheet of the fabric to an opposite sheet across the interior of the clothing.

3,834,066

BUBBLE GUN WITH SIMULTANEOUSLY OPERATED AIR BULB AND SOLUTION PUMP

Armando Luis Vargas, 12630 Emelita St., North Hollywood, Calif. 91607

Filed Nov. 20, 1972, Ser. No. 291,410
Int. Cl. A63h *33/28*
U.S. Cl. 46—8 **1 Claim**



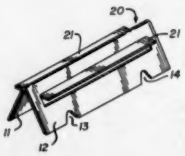
A bubble-making toy gun for producing a single bubble for each individual trigger actuation and including a single trigger mechanism provided with a compression device, that depresses and deflates a normally expanded rubber air storage bulb, thus forcing air forwardly through an air tube toward an ejection bubble-making ring at the forward end of the gun, while a pump, also operated by the single trigger mechanism, pumps a quantity of soapy solution, carried within a reservoir in the handle of the gun, forwardly to the bubble-making ring where it forms and ejects a single bubble from the forward end of the gun.

3,834,067

V-SHAPE BLOCKS HAVING FLANGES AND NOTCHES FOR STACKING

Roman A. Koleczek, 16531 S. Ridgeland, Tinley Park, Ill. 91607

Filed May 15, 1970, Ser. No. 37,593
Int. Cl. A63h *33/08*
U.S. Cl. 46—25 **11 Claims**



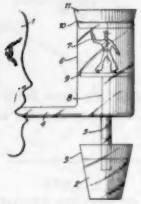
Toy building blocks which are, generally, V-shaped in cross-section and have locking notches in the lower sidewall edges thereof for permitting them to be stacked atop one another. Some blocks may include flanges projecting from the sidewalls adapted to support the lower edges of others. Still other blocks may be angular or curved instead of straight. The locking notches may have means adapted to receive and secure wheels to the blocks.

3,834,068

TOY STRAW WITH AN INTERNAL MOVING FIGURE

Norman A. Fabricant, 307 Martense St., Brooklyn, N.Y. 11226

Filed Mar. 31, 1971, Ser. No. 129,845
Int. Cl. A63h 29/16
U.S. Cl. 46—44 9 Claims



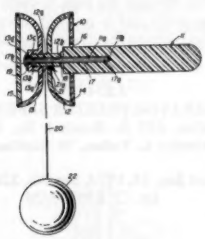
A toy in the form of a drinking straw. The straw has a transparent chamber near its midpoint and is shaped so the chamber is clearly visible to the user. Within the chamber is a movable object which pops up and falls with the flow of fluid through the the straw. The object may be a familiar cartoon character, a humorous subject, etc. Part of the chamber may be opaque so the object remains hidden until it suddenly appears. The object may also be caused to spin. The toy may be opened for cleaning, and may be used with separate disposable straws.

3,834,069

HAND MANIPULATED TOY

Paul L. Brown, 982 Lakeview Way, Redwood City, Calif. 94062

Filed Jan. 21, 1972, Ser. No. 219,776
Int. Cl. A65h 1/32
U.S. Cl. 46—51 9 Claims



A reel arranged on a handle for relative rotation with respect to one another and to the shaft of which a cord is fastened at its one end to effect controlled centrifugal action of an object fastened to the other end of the cord upon manipulation of the handle.

3,834,070

DOLL CARRYING A MARKING MEANS AND ACCESSORY WITH MOVABLE MARKING SURFACE

Jeffrey D. Breslow, Highland Park, and Eugene Jaworski, Park Ridge, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Jan. 26, 1973, Ser. No. 326,874
Int. Cl. A63h 13/04
U.S. Cl. 46—116 7 Claims

A combination doll and accessory set wherein the doll has a movable body portion and a movable arm connected to the body portion and adapted to hold a paint brush or the like. The accessory set includes a platen on which paper or the like may be positioned to receive paint from the paint brush. The platen is mounted on a base structure in front of the doll, and a manually actuatable mechanism within the base structure is operatively connected to a mechanism on the doll whereby the mechanism within the platen base structure can be operated by a user, as by a crank. Rotation of the crank rotates the platen and simultaneously moves the doll's body portion and arm back and forth to carry the paint brush therewith alternately between the platen and a paint container positioned alongside the doll but spaced from the platen.

3,834,071

DOLL WITH COORDINATED HEAD AND TORSO MOVEMENT

Rouben T. Terzian, and Marvin I. Glass, both of Chicago, Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Feb. 22, 1972, Ser. No. 227,892
Int. Cl. A63h 3/20
U.S. Cl. 46—120 5 Claims

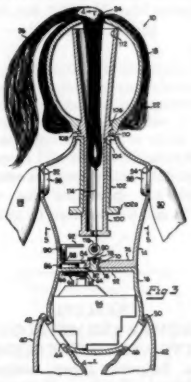


Fig 3

A doll which includes a lower torso portion, an upper torso portion which is rotatable about a vertical axis relative to the lower torso portion when the doll is in an erect disposition, and a head which is rotatable about a vertical axis relative to the upper torso portion. The doll is provided with a motor in the lower torso portion connected to the upper torso portion and the head for driving the upper torso portion and head through a to-and-fro twisting motion with the head movement being slightly behind the body movement.

3,834,072

SHAPE-RETAINING SUBSTRATE FOR A PLANT AND METHOD OF MAKING THE SAME

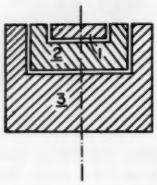
David Rack, Schwarzgrabenweg 17, A-5020 Salzburg, Austria

Continuation-in-part of Ser. No. 41,355, May 28, 1970, abandoned. This application Sept. 17, 1973, Ser. No. 398,067

Claims priority, application Austria, June 6, 1969, 5353/69; Nov. 20, 1969, 10854/69; Nov. 20, 1969, 10855/69; Mar. 5, 1970, 2085/70

Int. Cl. A01g 9/10

U.S. Cl. 47—37 7 Claims



A shape-retaining substrate for a plant comprises a mixture of 30 to 60 parts of dried peatmoss, 50 to 20 parts of foam flakes, a plant nutrient, and 15 to 20 parts of a polyurethane binder free of foaming agent which bonds the peatmoss, the foam flakes and the nutrient. The substrate is made by reacting the polyurethane constituents in situ with the peatmoss, foam flakes and nutrient mixture.

3,834,073

PHENYL NITRONE DERIVATIVES USEFUL AS SEED PROTECTANTS

Kenneth P. Dorschner, and James A. Albright, both of Jacksonville, Fla., assignors to SCM Corporation, Cleveland, Ohio

Division of Ser. No. 139,833, May 3, 1971, Pat. No. 3,767,818. This application Mar. 30, 1973, Ser. No. 346,682

Int. Cl. A01n 9/20

U.S. Cl. 47—57.6 7 Claims

Anti-microbial compositions comprising an inert carrier and a defined class of di-aryl nitrones are described. The compositions are advantageous in that they have high fungicidal activity against a substantially broad spectrum of plant pathogenic fungi, while at the same time the compositions are essentially non-phytotoxic to selected crops and ornamental plants in the fungicidally active amounts employed.

Also described are processes for controlling plant pathogens in soil by soil treatment or by treatment of the crop plant seeds.

3,834,074

SEEDLING GROWER AND METHOD OF PLANTING SEEDLING CULTIVATED IN THE SEEDLING GROWER

Atsushi Shirouzu, Sapporo, Japan, assignor to Kabushiki Kaisha Circle Tekkojo, Takikawa Hokkaido, Japan

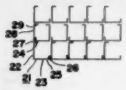
Division of Ser. No. 109,360, Jan. 25, 1971, Pat. No. 3,757,468. This application May 8, 1973, Ser. No. 358,323

Claims priority, application Japan, Feb. 2, 1970, 45-8578; Feb. 24, 1970, 45-15700; July 8, 1970, 45-59193; July 8, 1970, 45-59195; July 21, 1970, 45-63717

Int. Cl. A01g 9/02

U.S. Cl. 47—34.13 2 Claims

A seedling grower and a method of planting seedling cultivated in the seedling grower are disclosed. Said seedling grower is characterized by comprising a plurality of cells arranged in lattice form and formed by adhesively bonding together wall members made of a material such as paper, being collapsible when not in use and being able to be stretched into a spread lattice form from the collapsed state. Each of said cells is adapted to contain earth and cultivate a seedling therein.



3,834,075

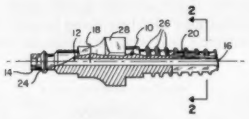
TREE TRUNK PRESSURE FEEDING DEVICE

Alvin E. Nix, Ashland, and Edward F. Maley, Wayland, both of Mass., assignors to Tre-X Injector Systems Company, Ashland, Mass.

Filed Feb. 12, 1973, Ser. No. 331,678

Int. Cl. A01g 29/00

U.S. Cl. 47—57.5 11 Claims



A device for pressure feeding of liquid chemicals into tree trunks comprises a pipe length with a threaded and tapered end for insertion into the tree trunk. Long peripheral slits are provided in the threaded and tapered end as the primary exit for liquid passing through the pipe to carry beneficial chemicals into the tree trunk and to prevent reaction forces of pressure feeding from ejecting the device from the trunk.

3,834,076

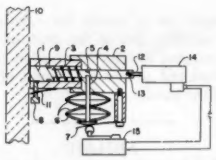
REFRIGERATOR/FREEZER SAFETY DEVICE

Richard E. Vallee, 619 S. Bourbon St., Blanchester, Ohio 45107, and Gerald E. Vallee, 30 Burkhart Ln., Gallipolis, Ohio 45631

Filed Jan. 24, 1973, Ser. No. 326,386

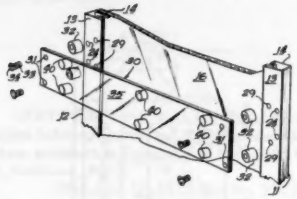
Int. Cl. E05f 15/20

U.S. Cl. 49—2 5 Claims



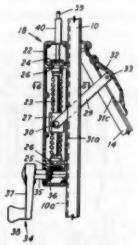
A device is described for opening the door of an enclosure, more particularly the magnetically held door of a refrigerator, freezer, or the like, which device is responsive to the temperature within the enclosure to open and hold the door thereof, to allow heat dissipation therefrom and air circulation therein, when the temperature within such enclosure exceeds a certain temperature.

3,834,077
PANIC BAR SAFETY PLATE
Virginia M. Meyer, 701 Smith Ave., Lake Bluff, Ill. 60044
Filed May 11, 1973, Ser. No. 359,492
Int. Cl. E06b 7/28
U.S. Cl. 49—50 8 Claims



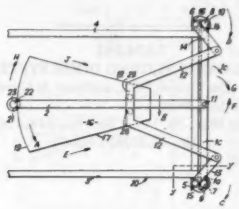
A panic bar safety plate device adapted for mounting behind a panic bar secured on a door having parallel stiles and a pane, such as glass, supported therebetween, the stiles having an inner wall surface with the panic bar being mounted thereon and extending therebetween, the safety place consisting of an elongated rectangular plate-like member of a sufficient length to extend over the inner wall surface of each of the stiles behind the panic bar with the end portions of the plate secured to the stiles by bolts, screws, or the like, and resilient bumper means projecting normal from the plate in a direction toward the pane adapted for engaging the pane in a resilient manner upon excessive impact force being applied to the plate in a direction toward the pane so as to cushion the impact and transfer the major portion of the impact force to the stiles with only a small portion being resiliently transferred to the pane in a manner protecting against the possibility of breaking or damaging the pane.

3,834,078
WINDOW ASSEMBLY
Gregory Beaumont, Chermside, Australia, assignor to Meyers Taylor Pty., Ltd., Virginia, Queensland, Australia
Filed Nov. 28, 1972, Ser. No. 309,990
Int. Cl. E05f 17/00
U.S. Cl. 49—85 5 Claims



A control assembly for a window assembly having a fixed window frame and an outwardly swinging casement window. The assembly includes a link which is pivoted at one end to a traveller nut carried by a jack screw and pivoted at its other end to the casement window at a point outwardly of the plane of the casement window. Vertical registering slots for the link are formed in the fixed window frame, the casement window and a mounting box which houses the jack screw and traveller nut.

3,834,079
GATES AND OPERATING MECHANISM THEREFOR
Peter Gilbert Rutland Funnell, 23 Pownale St., Masterton, New Zealand
Filed June 11, 1973, Ser. No. 368,881
Int. Cl. E05d 15/50
U.S. Cl. 49—193 8 Claims

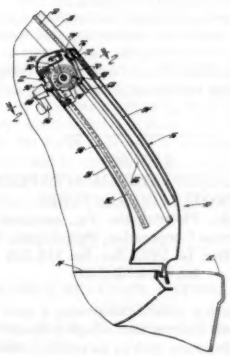


This invention relates to a gate with a two-way opening action about opposed sides.

Opposed hooks for releasably holding side members of the gate in supports at the gate opening are fixed to shafts which are rotatable by an operating lever via a linkage. Movement of the lever in one direction releases one hook and further engages the opposed hook about its associated side member for opening the gate about this side member and vice versa.

In one embodiment the movement of the lever is confined by co-operation with the edges of a shaped cam.

3,834,080
WINDOW REGULATOR FOR A STATION WAGON TAILGATE WINDOW
Leonard A. Lystad, Warren, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed May 2, 1973, Ser. No. 356,302
Int. Cl. E05f 11/38
U.S. Cl. 49—348 3 Claims



A regulator for controlling movement of a station wagon tailgate window between lower and upper positions and utilizing an elongated helical spring encircling an elongated rod of the regulator drive train to counterbalance the window. The rod and spring extend laterally of the vehicle and the ends of the rod are respectively fixed to a pair of control members rotatably supported by a pair of associated housings for movement about a common axis. A pair of drive tapes are passed over the respective control members in driving engagement therewith and define inverted U-shaped configurations in cooperation with guides receiving the ends of the tapes.

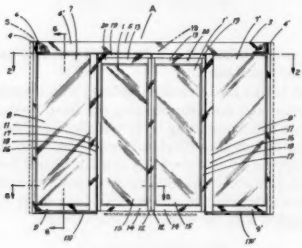
Laterally spaced lower portions of the window are attached to respective ends of the tapes so that the window is raised and lowered as the control members are rotated by a manually operable one way spring clutch. The elongated helical spring has one of its ends fixed to one of the control members and its other end fixed to the housing associated with the other control member so as to provide the counterbalancing for the window during its movement between the lower and upper positions.

3,834,081

AUTOMATIC SLIDING DOOR SYSTEM

John C. Catlett, Elm Grove, Wis., assignor to Gyro Tech Incorporated, Greendale, Wis.

Filed Mar. 30, 1973, Ser. No. 346,476
Int. Cl. E05f *11/54*
U.S. Cl. 49—360 **11 Claims**



An automatic sliding door system comprising a door frame having a header constituting a housing, a door carrier provided in said housing and projecting downwardly through an elongated opening therein, a door suspended from said door carrier, a prime mover in said housing, a first gear train connecting said prime mover to an operating sprocket, an idler sprocket, belt members extending about said sprockets and connected to said door carrier for effecting traverse of said housing by said door carrier for sliding the door to and from open position. A spring stressed during door opening operation and a second gear train connecting said spring and said operating sprocket for causing the door carrier to restore the door to closed condition. Circuit controlling components are provided for causing two-speed door-opening and door-closing.

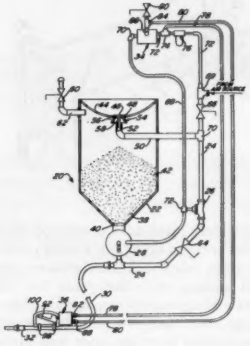
3,834,082

ABRASIVE BLASTING SYSTEM WITH PERSONNEL PROTECTIVE FEATURES

Michael Grudzinski, Philadelphia, Pa., assignor to Empire Abrasive Equipment Corporation, Philadelphia, Pa.

Filed Dec. 14, 1972, Ser. No. 315,248
Int. Cl. B24c *3/00*
U.S. Cl. 51—12 **11 Claims**

An abrasive blasting system comprising a tank for holding an abrasive material therein and a high pressure air-line for carrying abrasive from the tank to an article to be abraded. In one embodiment, a fluid controlled valve is provided connected between the tank and the air-line at a point in the line and a second fluid controlled valve is connected in the air-line upstream of the first valve. Both valves are controlled by a pilot valve disposed adjacent to tank. The pilot valve is operative when pressurized to open both controlled valves. A remote control valve is provided adjacent the downstream end of the air-line and includes a first port connected via a first control air-line to the air-line and a second port connected via a second control air-line to the pilot valve. Means are provided to connect the first and second ports together to thereby pressurize the pilot valve. The pilot valve includes means for venting the second control air-line to the atmosphere. In another embodiment, a manually operable valve is provided for providing abrasive into the air-line and a diaphragm valve is provided in the air-line upstream of the manually operable valve. The diaphragm valve includes an inlet port, an outlet port, the inlet port being upstream of the outlet port, a control outlet port connected to the inlet port and to a first control air-line, a control inlet port connected to a diaphragm



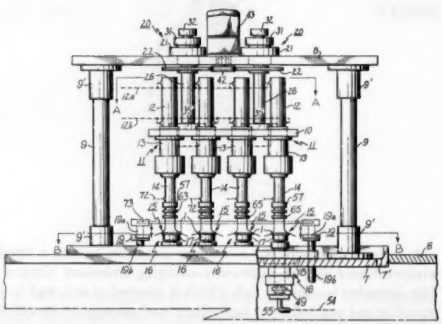
chamber and to a second control air-line and a venting port connected to said chamber. The diaphragm valve is operative when pressurized via the connection of the first and second ports in a remote control valve connected to said control lines to connect the inlet and outlet ports in the diaphragm valve together. A second diaphragm valve is provided to vent the tank when said first mentioned diaphragm valve is depressurized.

3,834,083

MACHINE FOR GRINDING AN EDGE CONTOUR ON A SEMICONDUCTOR WAFER

Kinji Hoshi, and Kazuhiro Sugita, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Dec. 21, 1971, Ser. No. 210,569
Claims priority, application Japan, Dec. 21, 1970, 45-115467
Int. Cl. B24b *9/06*
U.S. Cl. 51—57 **13 Claims**



A grinding machine for producing a rounded chamfer on the edge of a workpiece such as a semiconductor wafer. The

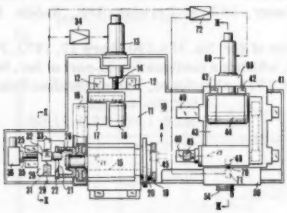
workpiece is attached to a revolving chuck and a grinding head having oblique resilient grinding members is located opposite the chuck. The grinding members lie along generators of a cone and extend beyond the edges of the workpiece and press against the edge. Semiconductor wafers are ground in this machine by pressing their edges against the resilient grinding devices while rotating the wafer and moving the grinding devices in a lateral circular path concentric with the axis of rotation of the wafer.

3,834,084

SERVO COPYING MACHINING APPARATUS

Kazuhiro Sakane, Kariya, and Wataru Iida, Aichi-ken, both of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya-shi, Aichi-ken, Japan

Filed June 19, 1973, Ser. No. 371,523
Claims priority, application Japan, June 27, 1972, 47-64821
Int. Cl. B24b *7/00, 9/00*
U.S. Cl. 51—101 R **5 Claims**



A servo copying machining apparatus comprises a main spindle rotatably journalled on a headstock capable of a copying motion. The spindle carries work mounting means and a template having a not truly circular curved surface. A stylus on the bed is urged against the curved surface and is associated with a displacement detector which detects the displacement of the stylus. A first servo motor responds to the detector output to initiate a copying motion of the headstock. A tool carriage carrying a tool is movable in a direction parallel to the direction of the movement of the headstock and is driven by a second servo motor. A second displacement detector senses the displacement of the tool carriage that results from a correcting copying motion of the tool carriage under the control of the second servo motor, which is controlled in accordance with the deviation between the outputs from the first and second displacement detectors.

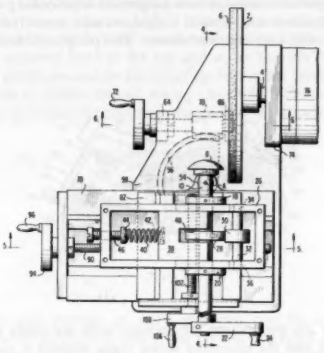
3,834,085

METHOD AND APPARATUS FOR FORMING A CABOCHON

John T. Moeller, 2858 State Rd. 590, Clearwater, Fla. 33515

Filed July 2, 1973, Ser. No. 376,100
Int. Cl. B24b *7/00, 9/16, 19/00*
U.S. Cl. 51—127 **11 Claims**

A cabochon is formed by rotating a gemstone workpiece about a rotational axis while contacting it with an abrasive surface, moving the workpiece and the rotational axis in a radial path in response to its rotational movement to change the lateral position of the rotational axis in response to the angular displacement of the workpiece during its rotation, and swinging the rotational axis with respect to the abrasive surface, the swing axis lying normal both to the rotational axis and to the radial movement of the rotational axis.

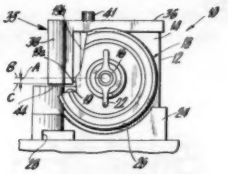


3,834,086

FORM TOOL FIXTURE

Rugero W. Aiudi, 32 George St., St. Bristol, Conn. 06010

Filed Jan. 8, 1973, Ser. No. 322,015
Int. Cl. B24b *3/00*
U.S. Cl. 51—218 A **4 Claims**



A form tool fixture to hold a cylindrical cutting form tool in order to grind its cutting edge consists of a body member, a screw threaded member protruding from a front face of the body member upon which the form tool is mounted, a wing nut to hold the form tool and a swingably mounted stop member positioned to correctly align the form tool and then to swing out of the way of the grinding head. The fixture also has flat side surfaces formed at angles to grind front clearance angles on the form tool.

3,834,087

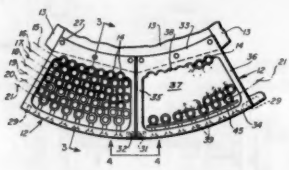
WORKPIECE RETAINER ASSEMBLY FOR DISC GRINDERS

Elman R. Dunn, Roscoe, Ill., assignor to Litton Industries, Inc., Beverly Hills, Calif.

Filed Aug. 22, 1972, Ser. No. 282,761
Int. Cl. B24b *7/04*
U.S. Cl. 51—237 T **3 Claims**

An annular array of workpiece retaining frame assemblies are mounted on a rotary work carrier for advancing a multiplicity of workpieces, such as coiled compression springs, between one or more pairs of abrasive discs. The work carrier comprises a series of equal segments each of which supports a pair of arcuate workpiece retaining frame assemblies. Each assembly comprises a frame which lockingly embraces a number of work retaining elements or bushings in rows concentric to the carrier axis thereby to carry a maximum number of work-

pieces, of given diameter within a given annular area. Locking is accomplished by a series of spaced clamping screws in an arcuate peripheral frame wall which serve to force the total complement of bushings into tangential interlocking contact with each other and toward a rigid arcuate inner frame wall provided with locating depressions. The peripheral frame wall



and the walls connecting the arcuate walls are made capable of flexure and the clamping screw force applied is such that the peripheral outer wall bows and the radial side walls of each frame are drawn toward each other when the clamping screws are tightened, and contribute to the clamping action or locking up of the workpiece retaining elements.

3,834,088

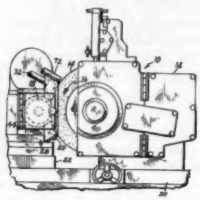
WEDGE FLOW COOLANT NOZZLE FOR GRINDING MACHINE

Charles Bernard Matson, Cincinnati, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Apr. 9, 1973, Ser. No. 348,988

Int. Cl. B24b *55/02*

U.S. Cl. 51—267 **4 Claims**



A coolant distributing apparatus for a grinding machine has a first casing above the workpiece adjacent the periphery of the grinding wheel for receiving coolant under pressure and directing it into the grinding wheel to be released at the operating zone, and a second casing designed to receive and contain the workpiece, the second casing forming a work chamber thereabout for maintaining the coolant around the outer periphery of the workpiece.

3,834,089

MONOWHEEL PLASTIC LENS EDGER

Cecil Barnett, London, England, assignor to Raphael's Limited, London, England

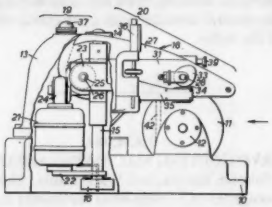
Filed Feb. 12, 1973, Ser. No. 332,006

Claims priority, application Great Britain, Feb. 14, 1972, 68013/72

Int. Cl. B24b *1/00, 9/14*

U.S. Cl. 51—284 **3 Claims**

An edging process performed on a lens made of transparent plastics material, comprising shaping the lens to the desired peripheral profile and also forming a V-section edge formation thereon by the use of a grooved milling or grinding wheel, in a single operation, the relative positions of the lens and the



wheel being determined by an adjustable stop with which a surface of the lens is held in contact.

3,834,090

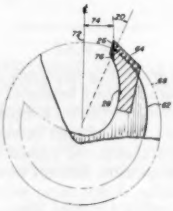
ROUTER BIT AND METHOD OF GRINDING SAID BIT

Ernest Wasser, 167 N. Leswing Ave., Saddle Brook, N.J. 07662

Division of Ser. No. 355,290, April 27, 1973, Pat. No. 3,803,950, which is a continuation-in-part of Ser. No. 128,741, March 29, 1971, abandoned. This application Feb. 13, 1974, Ser. No. 442,121

Int. Cl. B24b *1/00;* **B21k** *21/00*

U.S. Cl. 51—288 **2 Claims**



A router bit for use with a power driven spindle is adapted for the cutting of plastic, wood and certain soft metals. This router bit is formed with straight flutes in which the cutting edge portions are inserts of hardened material such as tungsten carbide. Each insert is formed and mounted in the body to provide a short flat face extending inwardly from the outer cutting edge to an arcuate concave relief formed in the face of the insert. This short flat face portion of the cutting edge is ground to provide a selected angle of fifteen to thirty-five degrees to a theoretical radial line drawn from the axis of the router bit to the cutting edge of the insert. Initial and resharpening of these edges requires only a very little grinding on the face to sharpen and reshape this edge.

3,834,091

HINGED GUTTER COVER

John Dugan, Box 515104 Irvine St., Kankakee, Ill. 60910

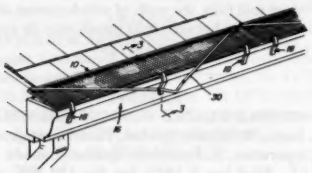
Filed June 14, 1973, Ser. No. 369,933

Int. Cl. E04d *13/00*

U.S. Cl. 52—12 **1 Claim**

An elongated gutter overlying mesh cover hingedly mounted on the outer edge of the gutter by clip means. The

cover includes an outwardly projecting handle portion selectively engaged by the double-hooked end of a tool for first



raising and dumping the cover and then positively repositioning the cover.

3,834,092

PANEL ASSEMBLY

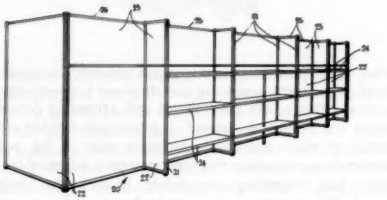
Hubert James Whisson, 89 King William Rd., Hyde Park, Australia (5061)

Filed Apr. 26, 1973, Ser. No. 354,511

Claims priority, application Australia, Apr. 26, 1972, 8747/72

Int. Cl. E04b *1/40, 2/82*

U.S. Cl. 52—36 **10 Claims**



A panel assembly comprising a plurality of posts, a plurality of panels, and interconnecting means releasably securing the panels to the posts, the posts each having a cross-sectional shape wherein each of the outer surfaces includes outstanding flanges with inturned lips which form narrow mouth channels, and the interconnecting means comprise retention clips contained within respective narrow mouth channels and having tongues which engage against the inner surfaces of the inturned lips so that loading applied to the clips is transferred to the lips. The panels are provided with complementary buttons having grooves which engage the tongues, and the edges of the panels abut the outer surfaces of the flanges. The invention avoids the need for special machining of the edges for attachment to the posts, and avoids the need for the use of attachment screws, the posts and panels being arranged in a simple snap together configuration.

3,834,093

PANEL JOINTURE SYSTEM

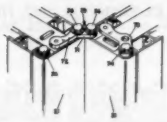
William H. Tacke, Wyoming; Robert B. Ormiston, Grandville, and Robert H. McKay, Grand Rapids, all of Mich., assignors to Steelcase Inc., Grand Rapids, Mich.

Division of Ser. No. 234,492, March 14, 1972, Pat. No. 3,802,146. This application July 9, 1973, Ser. No. 377, 272

Int. Cl. E04b *2/82*

U.S. Cl. 52—71 **8 Claims**

A partition system including a frame to which different types of covering panels can be readily hooked into place. Vertical wiring channels are provided at the end elements of the frame and covers are provided which simultaneously cover the wiring channels and mask the edges of the panel. Brackets for supporting superstructure can be secured to the end elements of the frame in channels which are defined by an end trim piece on one side and by a wall of the wiring channel on the other side. Adjacent partitions can be secured together angularly by means of a single link at the top and a single link at the bottom thereof. They can be secured in alignment by a pair of adjacent links at the top and at the bottom. Vertically spaced platforms can be mounted on feet at the bottom of the partitions to define spaced wiring channels. Telescoping end caps are provided for covering the ends of the wiring channels



and the top portion of each end cap can be telescoped downwardly to allow access to the connecting links at the bottom of the partition. The wiring channels can be covered on either side by a molding which is releasably securable to the bottom of the partitions. In the case of wiring which must pass from one partition to another where the partitions are to be disposed at an angle, a telescoping corner cap is provided. Finally, special connector brackets are provided for connecting partitions of different heights to one another at various angles.

3,834,094

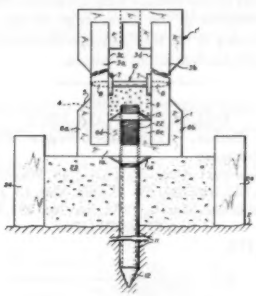
TRACK SYSTEM WALL ASSEMBLY FOR HOUSES OR THE LIKE

Bernard J. Ferguson, 60-10 Roosevelt Ave., Woodside, N.Y. 11377

Filed Sept. 12, 1973, Ser. No. 396,424

Int. Cl. E04d *15/00;* **E04h** *12/00*

U.S. Cl. 52—122 **7 Claims**



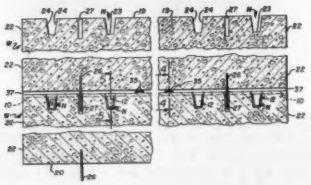
A track system wall assembly for a house, comprises a base track having a base and wall portions defining interior and exterior channels spaced from each other. A plurality of bottom openings are formed in the base intermediate to the channels. A plurality of pipe stakes insertable into soil and into the bottom openings are threaded at an upper end extending from above and below the openings. A lower holding washer is disposed on the upper end of the pipe stakes and supports thereon the base track, and an upper holding washer is disposed on the upper end of the pipe stakes and abuts wall portions of the base track. An exterior panel and an interior house panel are complementarily disposed in the exterior and interior channels, respectively, spaced apart from each other. A cap track forms outer and inner channels, in which the upper portions of the panels are disposed. Spacers maintain uniform spacing of the panels from each other, and vertical

corner posts insertable into the soil complementarily engage the lateral ends of the panels.

3,834,095
BUILDING CONSTRUCTION AND METHOD

Stuart A. Ohlson, 1600 York St., Denver, Colo. 80206

Continuation of Ser. No. 97,148, Dec. 11, 1970, abandoned, which is a continuation-in-part of Ser. No. 763,783, Sept. 30, 1968, abandoned. This application July 9, 1973, Ser. No. 377,789
Int. Cl. E04b *2/06, 5/02, 1/04*
U.S. Cl. 52—122 **18 Claims**

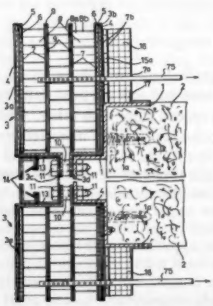


A multiple story building construction and method involving placing reinforcement on top of precast floor panels on opposite sides of a lower precast wall panel supporting the floor panels and a precast wall panel spaced above, then pouring a concrete topping on the reinforcement and through the space between the wall panels and up against the lower end of the wall panel above, to provide a monolithic floor of reinforced concrete extending longitudinally and laterally of the building. The space between superimposed wall panels is adjusted by shims, also used to level the wall panel above, while the reinforcement may extend through the space between the wall panels or may be welded to opposite sides of a channel embedded in the lower edge of the upper wall panel. At the outside walls, the floor reinforcing may be welded to extending reinforcing rods of the outside wall panels, or may be welded to angles embedded in the lower edge of the panels, with upright reinforcing in the wall panels welded to the angles, as well as to the channels referred to above.

3,834,096
INSULATING WALL UNIT

Otto Alfred Becker, Robert-Koch-Strasse 59, 66 Saarbruecken, Germany

Continuation-in-part of Ser. Nos. 826,958, May 22, 1969, Pat. No. 3,646,721, and Ser. No. 37,068, May 13, 1970. This application Mar. 6, 1972, Ser. No. 231,815
Int. Cl. E04b *1/74*
U.S. Cl. 52—172 **11 Claims**

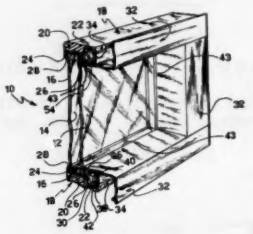


A wall unit comprising panels lying at opposite faces of said unit, a seal arranged between the margins of said panels, and an insulation occupying the cavity between said panels, wherein the improvement comprises at least one insulating group extending parallel to said panels and comprising two foils capable of reflecting thermal radiation and chambers lying between said foils, the walls of which consist of insulating material. The cavity between said panels may be evacuated or it may be filled with dry air or a dry gas.

3,834,097
DOUBLE GLAZED WINDOW ASSEMBLY

Denis L. Smits, St. Hilaire, Quebec, Canada, assignor to Superseal Corporation, St. Hyacinthe, Quebec, Canada

Filed Jan. 2, 1973, Ser. No. 320,285
Claims priority, application Canada, Dec. 19, 1972, 159,387
Int. Cl. E06b *7/12, 1/18*
U.S. Cl. 52—172 **4 Claims**

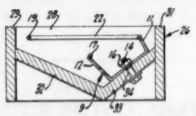


The sealed double glazed window assembly consists of a pair of glass sheets, a spacing unit disposed between the inner marginal edges of the glass sheets and extending completely around the periphery thereof, a protection border element formed of vinyl plastics including a pair of leg portions completely surrounding the outer marginal edges of the glass sheets and extending completely around the periphery thereof. The protection border further includes an integral flange defining with one of the leg portions a channel in which is mounted a series of metallic moulding strips. The combination of the metallic strips and the vinyl plastics border makes it possible to obtain a single assembly which can be quickly installed.

3,834,098
STAIR TREAD AND METHOD OF PRODUCING THE SAME

Paul C. Wutzke, 9312 Mazatlan, Elk Grove, Calif. 95624

Filed Jan. 4, 1973, Ser. No. 320,925
Int. Cl. E04f *11/00*
U.S. Cl. 52—189 **2 Claims**



A stair tread has a clip with a central web and a pair of edge flanges provided with a central reinforcing rod secured to one of the flanges and a rim reinforcing frame secured to the other of the flanges. The central web has an opening therein through which a bolt extends into a nut on the inside of the clip. The clip and rod and frame as well as a bolted nut are placed into a mold and the reinforcements are embedded in concrete. Prior to the final hardening of the concrete the bolt is removed leaving the nut and the reinforcements embedded. Removal is preferably accomplished by inverting the mold. There can be

openings through the concrete of the tread adjacent a portion of the rim reinforcing frame to receive uprights for supporting stair rails.

3,834,099

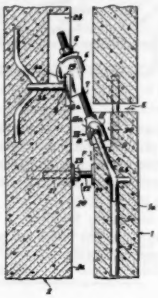
DEVICE FOR MOUNTING WALL PLATES

Ernst Haeussler, Grashofstr. 43, 43 Essen-Bredeney, Germany

Continuation-in-part of Ser. No. 192,474, Oct. 26, 1971, Pat. No. 3,760,542. This application Dec. 18, 1972, Ser. No. 315,893The portion of the term of this patent subsequent to Sept. 25, 1990, has been disclaimed.

Int. Cl. E04b *2/88, 5/57*

U.S. Cl. 52—235 **11 Claims**



An assembly for mounting a plate upon a support structure, comprising a first anchor member formed on said support structure; a second anchor member formed on said plate; and adjustable suspension means interconnecting said anchor members, said adjustable suspension means including a bolt connected with one of said anchor members and deflectible relative thereto; a hook-forming element of U-shaped adjustable receiving said bolt and having a pair of shanks formed with hooks engaging the other of said members, and a nut threaded onto said bolt and bearing upon said element.

3,834,100

BUILDING BLOCK

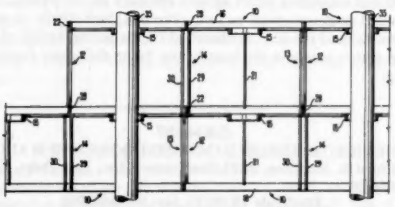
Arthur Stephen Healey, Brisbane, Australia, assignor to Harvard Industrial Development Pty., Ltd., Woodbridge, Brisbane, Queensland, Australia

Filed Jan. 5, 1972, Ser. No. 215,491

Claims priority, application Australia, May 3, 1971, 4787/71

Int. Cl. E04c *1/10, 2/20*

U.S. Cl. 52—309 **6 Claims**



A building block of hollow box-like form, shaped at its ends and at top and bottom for interfitment with adjacent similar blocks of a course, and with similar blocks of succeeding courses, has its sides interconnected by a cross-member with an enlarged middle portion having an opening formed therethrough from top to bottom, the cross-member being such that in a wall of the blocks, the openings through cross-members of blocks of the courses are vertically aligned and are adapted to receive a vertical reinforcing member.

3,834,101

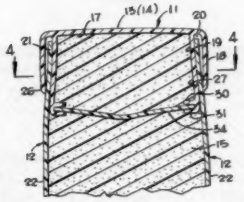
INSULATED DOOR CONSTRUCTION

Charles M. G. Wilder, Westfield, and Sanford L. Cook, Edison, both of N.J., assignors to Mesker Industries, Inc., St. Louis, Mo.

Filed Aug. 25, 1972, Ser. No. 283,847

Int. Cl. E04c *2/38*

U.S. Cl. 52—309 **6 Claims**



This insulated door construction includes extruded plastic framing members and sheet plastic side panels, which are connected without the use of fasteners. The framing members are U-shaped and include spaced inner and outer legs which are sprung apart to clamp the side panels in place. The door includes an expanded foam plastic core which cooperates with the framing members to resist separation of the framing members and the side panels. In one species the inner legs of the framing members are held apart by foam-embedded transverse spacer members. In another species, particularly adapted to suit hingedly mounted doors, a continuous interior member cooperates to hold the framing members in place and provide reinforcing for the hinge mounting.

3,834,102

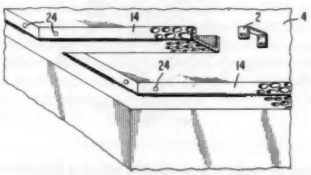
BEAM HANGER CONSTRUCTION

Larry D. Adams, 1302 Village of Pennbrook, Levittown, Pa. 19058

Filed Dec. 20, 1972, Ser. No. 316,871

Int. Cl. E04f *19/02*

U.S. Cl. 52—311 **2 Claims**



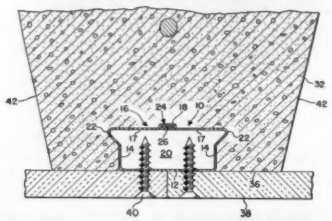
A beam and hanger assembly is provided for securing wooden, or wood simulating beams to an existing ceiling construction. For this purpose, a generally U-shaped mounting bracket is secured in an inverted position to the lower surface of a ceiling and has downwardly extending side flanges provided with aligned openings therein. The beam of the assembly is in the form of a channel member having upwardly extending sides positioned on the outer sides of the downwardly extending flanges of the mounting bracket and a dowel or similar fastening means extends through aligned

openings in the sides of the beam and the openings in the flanges of the bracket to secure the beam in place. The beam may be formed so as to be bowed upwardly between the ends thereof so as to assure firm contact of the beam with the ceiling and positive engagement of the holding member with the bracket.

3,834,103
CONCRETE INSERT

Friedrich K. Knohl, Roselle, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Continuation of Ser. No. 62,463, Aug. 10, 1970, abandoned.
This application Nov. 28, 1972, Ser. No. 310,038
Int. Cl. E04b *2/20, 2/48*
U.S. Cl. 52—372 **2 Claims**

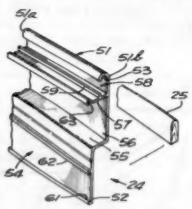


An insert for precast concrete or the like which provides an exposed surface relative to one face of the concrete for attachment of a fastening element through the exposed surface and offering substantially no resistance to the fastening element as it is attached thereto. The insert includes a sealing seam which also imparts structural rigidity to the insert.

3,834,104
ROOF LOCK MEMBER

R. S. Dunn, Los Angeles, Calif., and William J. Rife, Phoenix, Ariz., assignors to Neet Products, Incorporated, City of Industry, Calif.

Division of Ser. No. 148,470, June 1, 1971, Pat. No. 3,729,884.
This application Oct. 13, 1972, Ser. No. 297,268
Int. Cl. E04c *3/07*
U.S. Cl. 52—376 **1 Claim**

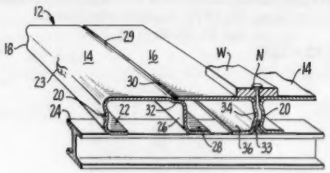


A method of roof construction in which a flexible roof cover sheet is placed over the upper surface of a roof frame and is attached to that upper surface at points spaced inwardly from its outer edge, an elongated roof lock member is positioned adjacent the outer edge of the roof frame, the cover sheet is extended out over the upper surface of the roof lock member, the cover sheet is attached to the upper surface of the roof lock member at various points spaced along the length of the member, the outer longitudinal edge of the member is rotated downwardly so as to stretch the cover sheet in a lateral direction, and then the roof lock member is rigidly fastened in its rotated position so as to maintain the lateral tension in the cover sheet.

3,834,105
NAILABLE STEEL FLOOR PLANKING FOR FREIGHT VEHICLES

Joseph E. Powers, Napa, Calif., assignor to Kaiser Steel Corporation, Oakland, Calif.

Filed Dec. 15, 1972, Ser. No. 315,333
Int. Cl. E04b *5/10*
U.S. Cl. 52—377 **4 Claims**

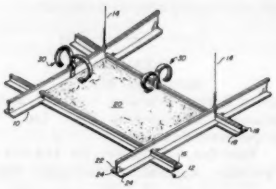


A steel floor plank having supporting webs at opposite edges of the top plate thereof and one or more supporting webs medially of the plate. The plank is composed of two or more sections which are welded together and the medial web is integral with one of the plate sections. A method for making such floor plank including forming a blank for the plank, slitting the blank into two or more parts, and then reforming the parts into a complete plank.

3,834,106
HOLDING CLIP FOR PANEL BOARD IN CEILING GRIDS

George Astedt, Minneapolis, and Roger Benasutti, Shoreview, both of Minn., assignors to Conwed Corporation, St. Paul, Minn.

Continuation of Ser. No. 112,928, Feb. 5, 1971, abandoned.
This application Oct. 3, 1973, Ser. No. 402,893
Int. Cl. E04b *1/40, 5/52*
U.S. Cl. 52—489 **3 Claims**



A holding clip of spring steel is provided for ceiling suspension systems in which the clip is secured to the runners of the grid and resiliently bears against the back of the panels. Any upward pressure, such as from, brooms, basketballs in gymnasiums, and the like, is absorbed by the spring action of the clip which prevents the board from being dislodged from the grid.

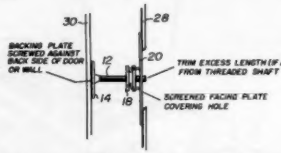
3,834,107
DEVICE TO REPAIR DAMAGED DOORS AND WALLS

Clifford R. Standing, 8821 Sunnybrook Ln., Fair Oaks, Calif. 95628

Filed July 19, 1973, Ser. No. 380,598
Int. Cl. E04g *23/02*
U.S. Cl. 52—514 **4 Claims**

A device for repairing a damaged double walled structure such as a hollow-core door comprises a threaded shaft, a backing plate integrally fixed to the shaft and in an operative use position resting against the interior of a rear wall of the

double walled structure, a block member threadly mounted on the shaft, a screened facing plate in an operative use position resting against the interior of a front wall of the double walled structure, the shaft being movably mounted to the desired adjusted position within the length of an elongated slot of the screened plate and a pair of rails on the screened plate and a

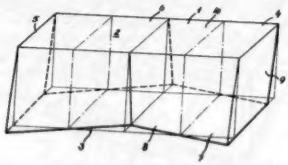


grooved railireceiving block member movably mounted thereon. The various adjustable features of the shaft, screened plate and block member provide a means of easy insertion through the damaged wall portion and a means of securely fastening the device in a selective position within the double walled structure to provide a permanent and rigidly fixed backing panel for a filling material such as a plaster.

3,834,108
BUILDING ELEMENT

Hans Thorkil Ludvigsen, Fgellebro Rudne Fume, Funen, Denmark

Continuation of Ser. No. 112,907, Feb. 5, 1971, abandoned. This application Dec. 27, 1972, Ser. No. 319,016
Int. Cl. E04c *1/30, 2/04*
U.S. Cl. 52—593 **2 Claims**



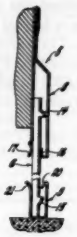
Building element for walls, pavings and the like structures comprising two parallel side faces forming parts of the surfaces of the structure, ends fitting into each other and the remaining two sides fitting into the sides of adjacent elements placed in half-brick order, the sides fitting into adjacent elements consisting of an inclining central section and adjoining end sections inclining oppositely from the lateral plane and being of a shape allowing any point of a side edge of one of the parallel side surfaces to be joined with a side edge on the other through a straight lined generatrix, which element is interlocking perpendicularly to the plane of the structure and in longitudinal direction of the elements in a way which allow setting without breaking the interlocking due to a wedge effect.

3,834,109
METHOD OF SKIRTING A MOBILE HOME

Marco J. Iacona, Utica, Mich. 48087

Continuation of Ser. No. 89,780, Nov. 16, 1970, abandoned, which is a continuation-in-part of Ser. No. 774,845, Nov. 12, 1968, Pat. No. 3,511,998. This application Mar. 7, 1972, Ser. No. 232,544
Int. Cl. E04b *1/00*; **E04g** *21/00, 23/00*
U.S. Cl. 52—742 **6 Claims**

Method of skirting a mobile home comprising applying to a side of said mobile home means forming a track and individually inserting in said track a plurality of panels in edge overlapping relationship to each other so as to permit relative

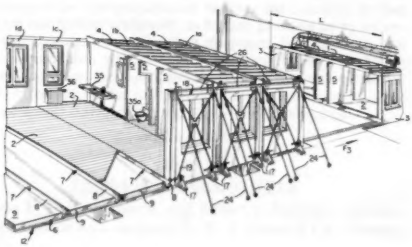


vertical movement between adjacent panels, said panels being vertically slidable in said track when they are moved vertically on account of weather changes.

3,834,110
METHOD FOR THE MANUFACTURE OF PREFABRICATED HOUSING UNITS

Michel Vercelletto, 97 rue Ledru-Rollin, 72 Mamers (Sarthe), France

Filed June 8, 1972, Ser. No. 260,962
Claims priority, application France, June 17, 1971, 71.22028
Int. Cl. E04g *21/14*
U.S. Cl. 52—745 **5 Claims**



This method relates to the construction of buildings or structures from units forming cells fabricated and equipped in the factory and assembled on the erection site. According to this method, a plurality of cells designed to form a construction unit, house or building storey, are manufactured in the factory side by side and exactly in the respective position occupied by the cells once the building is completed after setting up and assembling. These cells are however made as units which are independent from each other and which are detachable.

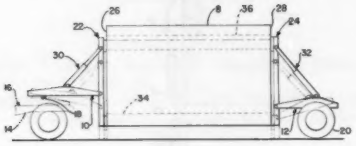
3,834,111
METHOD FOR TRANSPORTING BUILDING MODULES

Douglas B. Acker, San Francisco, and Trevis L. Berry, Gilroy, both of Calif., assignors to Reliance Trailer Manufacturing, Inc., San Francisco, Calif.

Division of Ser. No. 187,357, Oct. 7, 1971, Pat. No. 3,795,336. This application Nov. 30, 1973, Ser. No. 420,725
Int. Cl. B60p *3/40*
U.S. Cl. 52—747 **1 Claim**

A building module transporter for connection to a towing vehicle comprising a building module and module carriers attached to end walls of the module and resting on carrier supports. The carriers are firmly secured to the module at verti-

cally spaced points to suspend the module between them and to permit the raising and lowering of the suspended module by pivoting the carriers about horizontal axes with respect to the supports. Means is provided for moving the module with respect to the carriers in a lateral direction to facilitate the

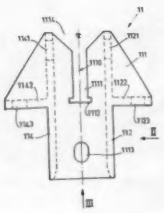


precision alignment of the module with a foundation at the building site. The spaced connection points between the module and the carriers tension a lower portion of the suspended building and place an upper portion thereof in compression.

3,834,112
STRUCTURAL CLIP

Jean-Francois Cara, Les Orchides, Asnieres, France, assignor to Industrialisation Rationnelle Du Batiment IRBA GP, Maxeville, France

Filed June 20, 1973, Ser. No. 371,741
Claims priority, application France, June 22, 1972, 72.22486
Int. Cl. F16b *1/00, 5/00*
U.S. Cl. 52—760 **6 Claims**



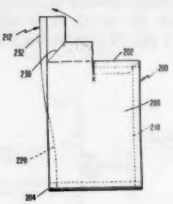
A clip for fastening elements of a casing to be fastened on a support for subsequent incorporation into a pre-fabricated panel comprising a case carrying a bottom pin and a top pin perpendicular thereto and pivoting in ovalized holes in a direction perpendicular to the two pins, two arms pivoted on the bottom pin and having an upper hole through which the upper pin passes, and having a hooked member at the bottom and an offset head at the top, and a lever pivoted on the top pin and carrying a cam cooperating with a fixed support fastened to the case.

3,834,113
METHOD FOR FORMING TOASTER PACKAGES HAVING POUR SPOUTS

James H. Howe, and Joseph Markus, both of Long Island, N.Y., assignors to Nabisco, Inc., New York, N.Y.

Division of Ser. No. 813,911, May 7, 1969, Pat. No. 3,663,239. This application Apr. 30, 1971, Ser. No. 139,283
Int. Cl. B65b *43/02*
U.S. Cl. 53—14 **1 Claim**

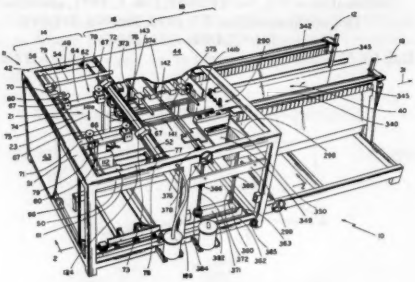
Packages having pour spouts for storing food and heating the food in a toaster including a top seal having the pour spout incorporated therein in order to permit formation of the pour spout after the packages are vented by tearing through the top seal to enable food to be poured from the packages. A method of forming the packages including folding a sheet of material upon itself to form a top margin, a bottom margin and a longitudinal seam, sealing the longitudinal seam, forming a bottom seal with the bottom margin, filling the package through the top margin with food, and forming a top seal with the pour spout by folding the top margin upon itself twice.



3,834,114
PACKAGING MACHINE AND METHOD

Richard H. Johnson, Arlington Heights, Ill., assignor to Stone Container Corporation, Chicago, Ill.

Filed Aug. 29, 1972, Ser. No. 284,649
Int. Cl. B65b *11/18, 49/00*
U.S. Cl. 53—32 **57 Claims**



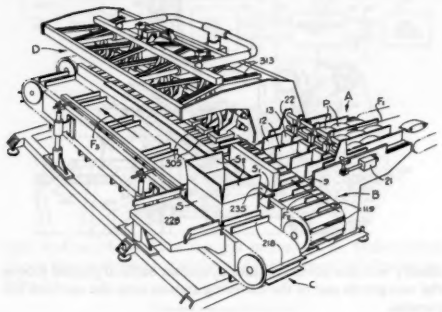
A packaging machine operable to fold a paperboard blank into a carton about one or more articles to be packaged therein. The machine includes a blank folding station, a flap folding station, a package completion station, a first pusher mechanism for pushing a partially formed carton from the blank folding station to the flap folding station and a second pusher mechanism articulated with the first pusher mechanism and operable to move a partially formed package from the flap folding station to the package completion station at the same time a next succeeding partially formed carton is being moved by the first pusher mechanism from the blank folding station to the flap folding station. The stations are arranged in line with the direction of movement of the first and second pusher mechanism.

The method includes the steps of folding a carton blank with a product thereon at a blank folding station to erect end wall panels and partial side wall panels, then folding a top wall panel of the carton downwardly over the product while moving the partially formed carton to a flap folding station, then folding side flaps extending from the top wall panel against the partial side wall panels at the flap folding station, and folding an end flap hingedly connected to the top wall panel against one end wall at the package completion station to seal the carton into a complete package. The steps are performed sequentially along an in-line path of movement.

3,834,115
BAG PACKING APPARATUS

Robert B. Johnson, Santa Clara, and Louis F. Robert, Belmont, both of Calif., assignors to Fibreboard Corporation, San Francisco, Calif.

Filed Nov. 29, 1972, Ser. No. 310,336
Int. Cl. B65b *57/02, 57/10, 5/10*
U.S. Cl. 53—55 **24 Claims**

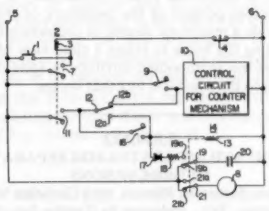


An apparatus sequentially comprises an article infeed station for conveying a plurality of sealed bags in tandem, an article conveying station for receiving and moving the bags transversely relative to the infeed station, a carton conveying station for simultaneously moving shipping cartons parallel to the article conveying station and a packing station for depositing layers of the bags in the cartons. The infeed station comprises a plurality of parallel chutes and an underlying conveyor which sequentially deposits a bag from each chute onto a conveyor of the article conveying station. The latter conveyor moves the bags into the packing station whereat each bag is picked up by a vacuum head and deposited into a carton which is moved thereunder by a conveyor of the carton conveying station.

3,834,116
CONTROL DEVICE FOR A COIN-WRAPPING MECHANISM

Komei Inoue, and Kazuto Asami, both of Himeji, Japan, assignors to Glory Kogyo Kabushiki Kaisha, Hyogo-ken, Japan

Continuation-in-part of Ser. No. 156,239, June 24, 1971. This application June 15, 1973, Ser. No. 370,466
Claims priority, application Japan, June 24, 1970, 45-54501
Int. Cl. B65b *57/20*
U.S. Cl. 53—59 R **1 Claim**

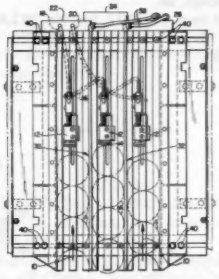


A control device for controlling a coin-wrapping mechanism in which an a.c. motor is provided with means for regulating the operational period of the coin-wrapping mechanism, with a capacitor being charged during the operation of the a.c. motor through a rectifier, and a control circuit which interrupts the a.c. voltage and supplies a d.c. voltage established across the charged capacitor to the a.c. motor at an instant when the above mentioned operational period of the coin-wrapping mechanism terminates.

3,834,117
LANE DEFINING APPARATUS FOR HANDLING ARTICLES IN COLUMNS

Eugene G. Gift, Glastonbury, Conn., assignor to Emhart Corporation, Bloomfield, Conn.

Filed Mar. 2, 1973, Ser. No. 337,763
Int. Cl. B65b *35/58*
U.S. Cl. 53—61 **6 Claims**

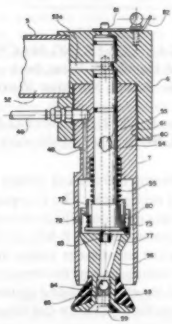


Several longitudinally extending wall means define lanes therebetween for receiving articles in orderly columns. Certain of said wall means are expandable to trap the articles in the lanes, either for purposes of braking the columns so that they are not further advanced, as by line pressure or by an underlying conveyor, or for other purposes. For example, the novel expandable wall structure permits the articles to be gripped so that they can be bodily transported either to another station in the machine, or for inversion to be drop packed upside down in an upwardly-open packing case.

3,834,118
DRIPLESS VACUUM NOZZLE

Thomas E. Waldrop, Greer, and Robert S. Hawkins, Spartanburg, both of S.C., assignors to W. R. Grace & Co., Duncan, S.C.

Filed Sept. 4, 1973, Ser. No. 394,374
Int. Cl. B65b *31/04*
U.S. Cl. 53—79 **8 Claims**



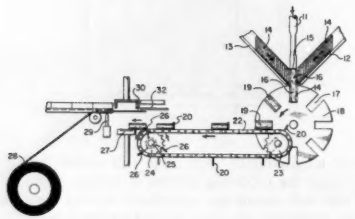
This invention is a dripless vacuum nozzle for use in an apparatus for vacuum packaging articles in flexible pouches or bags. The neck of a filled bag is placed around the barrel of

the nozzle, and downward movement of the barrel clamps the bag neck between the barrel and a plunger located in and below the opening to the barrel. The bag remains in this clamped position as it is evacuated completely afterwhich it is sealed and severed from the clamp. A pivotally operated ball valve, drip collection cup, and ball check valve prevent any moisture from dripping into the package while it is being evacuated.

3,834,119
ICE CREAM SANDWICH WRAPPING MACHINE

John Armitt, Kearny; Paul Guerrero, Elizabeth, and Robert J. Peterson, Jackson, all of N.J., assignors to The Quaker Oats Company, Chicago, Ill.

Filed Sept. 27, 1972, Ser. No. 292,658
Int. Cl. B65b *11/54, 49/08*
U.S. Cl. 53—230 **1 Claim**



An ice cream sandwich wrapping machine is disclosed of the type that takes ice cream sandwiches from a conveyor and places them on a platform whereon a wrapper is first tucked under the rear portion of the sandwich, then tucked under the end portions of the sandwich, and thereafter moved off the platform so that the wrapper is tucked under the front portion of the sandwich. This invention specifically discloses a means for moving the ice cream sandwiches from the conveyor to the platform with such means comprising a rotating shaft having three tines equally spaced thereon with the tines being curved away from the direction of operational motion of the shaft.

The disclosure further includes the improvement wherein the end tuckers comprise plates on either side of the ice cream sandwich with the plates having holes therein and means for moving tucking fingers through the openings to tuck the wrapper underneath the ends of the ice cream sandwiches.

3,834,120
FOOD TRAY COVERING MACHINE

Paul L. De Faccio, and Harold H. West, both of Seattle, Wash., assignors to Harbor Island Machine Works, Inc., Seattle, Wash.

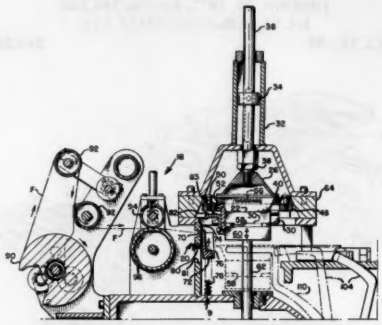
Filed Dec. 6, 1972, Ser. No. 312,642
Int. Cl. B65b *7/28, 41/16, 41/18*
U.S. Cl. 53—298 **13 Claims**

Thin sheets of aluminum foil are cut to size and placed over the open top of a food receptacle. The receptacle is supported by an upwardly movable member which moves the receptacle past the foil sheet supports carrying it into an engagement with an anvil. Further upward movement raises the anvil. Further inward and upward simultaneous movement of the folding means presses the foil sheet around and against the underside of the receptacle rim to firmly secure the sheet to the receptacle.

Cutting means for separating a piece of foil from a roll are actuated by the upwardly moving member.

The foil is pushed to the sheet supports by rollers in two intermittent motions to reduce acceleration forces.

The overall apparatus has an infeed conveyor, an infeed pusher moves the receptacle laterally off the infeed conveyor into a covering station, outfeed apparatus is aligned longitudinally with the covering station, and an outfeed pusher moves the receptacle out of the covering station onto the outfeed apparatus.



3,834,121
EYESHIELD FOR HORSES

James G. Mahoney, 439 E. 60th St., Hialeah, Fla. 33013

Filed June 21, 1973, Ser. No. 372,172
Int. Cl. B68c *5/00*
U.S. Cl. 54—80 **1 Claim**

A transparent eyeshield, particularly for race horses, fixed relative to the head and nose bands and formed from a piece of clear plastic or any other suitable transparent material. The eyeshield is sized and shaped to be placed relative to the horse's face between the muzzle and cheek areas and is contoured to slope upwardly and outwardly relative to the horse's face. In its preferred form, the upper edge of the eyeshield normally terminates in a horizontal place substantially at or slightly above the bottom portion of the periphery of the eyes of a horse to provide a maximum degree of protection for the eyes while permitting the horse to retain a clear view of a substantial portion of the surrounding territory in spite of mud and dirt thrown onto the eyeshield by other horses.

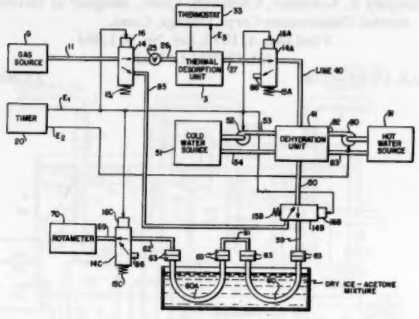
3,834,122
METHOD AND APPARATUS FOR SEPARATING HYDROCARBONS

Jean B. Allison; Kadry K. Bissada, and Christine M. Peterson, all of Houston, Tex., assignors to Texaco Inc., New York, N.Y.

Filed Nov. 2, 1972, Ser. No. 302,716
Int. Cl. B01d *53/04*
U.S. Cl. 55—33 **9 Claims**

Means and method which provides for thermal desorption of gas, including light hydrocarbons, from an earthen sample. Carrier gas mingles with the desorbed gas to carry it to a

dehydrating unit. After dehydration, the gas mixture is provided to a hydrocarbon trap which substantially separates the



light hydrocarbons from the gas mixture. The hydrocarbon trap is then removed for analysis of the trapped light hydrocarbons.

3,834,123

DUST AND LIKE FILTERS METHOD

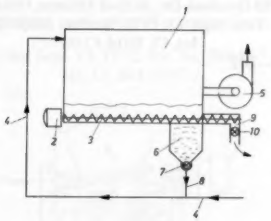
Adolf Margraf, 4961 Wendthagen am Haberkamp 196, Germany

Filed Mar. 1, 1972, Ser. No. 230,721

Claims priority, application Germany, Mar. 18, 1971, 2113062; Nov. 25, 1971, 2158461

Int. Cl. B01d *46/04*

U.S. Cl. 55—96 **2 Claims**



This invention relates to filtering flue gases and other gases containing dust and similar dirty constituents of fine-particle size, utilizing a pocket filter, and wherein certain of the dust constituents are agglomerated. In accordance with the invention, a quantity of filtered dust is continuously circulated ahead of the filter and added to the gas to be cleaned. An accumulating amount of the dust is removed from the filter, which corresponds to the amount of fine dust contained in the dust-laden gas to be cleaned per unit of time. Preferably, the filtered dust that is re-circulated represents a multiple of the dust accumulating per unit of time and this multiple may be of the order of 2 to 100 times that amount.

3,834,124

GAS TRAP DEVICE FOR AN INTRAVENOUS INJECTION

Hiroshi Ichikawa, Fujinomiya, Japan, assignor to Jintan Terumo Co., Ltd., Tokyo, Japan

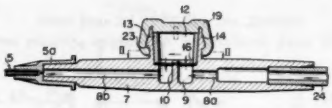
Filed Nov. 28, 1972, Ser. No. 309,976

Claims priority, application Japan, Dec. 1, 1971, 46-112227

Int. Cl. B01d *19/00*

U.S. Cl. 55—159 **10 Claims**

A gas trap device for an intravenous injection comprises longitudinal extending passageways, an inverted, U-shaped passageway provided between and communicated with the longitudinal extending passageways, and a trap chamber pro-



vided at the top portion of the inverted, U-shaped passageway so as to prevent a gaseous material contained in a transfusion liquid from entering the body.

3,834,125

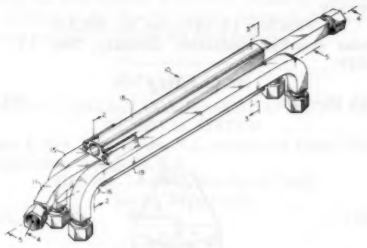
HIGHLY EFFICIENT LONG LIFE GAS TRAP

Albert P. Richter, Jr., Houston, Tex., assignor to Texaco Inc., New York, N.Y.

Filed Dec. 18, 1972, Ser. No. 315,949

Int. Cl. B01d *53/04;* **F25b** *29/00*

U.S. Cl. 55—208 **4 Claims**



A gas trap is disclosed comprising an elongated chamber formed in an integral housing, coolant means formed integrally with two opposite sides of the chamber for trapping the particular gas, such as hydrocarbon, in a filter, as a carbon molecular sieve, and heating means formed integral with the other two opposite sides of the elongated chamber for releasing the particular gas from the sieve for being flushed out to a gas analyzer whereby the integral housing accordingly has a longer life because of the high resistance to cracking due to continuously alternating between thermal expansion and contraction.

3,834,126

WATER SEPARATOR

Philip J. DiMinno, Jr., Stafford Springs, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

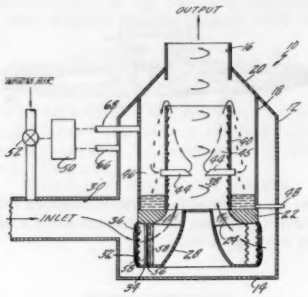
Filed Jan. 26, 1973, Ser. No. 327,032

Int. Cl. B01d *49/00*

U.S. Cl. 55—210 **7 Claims**

A screen mounted in close proximity to but spaced

downstream from a coalescer of a water separator serves to prevent ice from egressing into the airstream of an air conditioning system for an aircraft and improve the efficiency of the water separator.



3,834,127

APPARATUS FOR THE SCRUBBING OF GASES

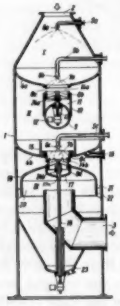
Wenzel Von Jordan, Wixhausen; Albert Kleinhenz, Oberhochstadt; Jean Wiemer, Mainz, and Horst Hemmerling, Frankfurt am Main, all of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Germany

Filed May 11, 1973, Ser. No. 359,531

Claims priority, application Germany, May 19, 1972, 2224519

Int. Cl. B01d *47/06*

U.S. Cl. 55—226 **9 Claims**



A single-stage or plural-stage scrubber having a cylindrical or polyhedral housing is provided with a bottom partitioning the housing into upper and lower portions and provided with an outlet of a cross-section less than that of the partitioned housing through which the gas emerges. Below this bottom is provided an upward open tub and a ring is provided between the outlet and the tube to define a laterally open clearance which is adjustable by vertical displacement of the ring. Preferably two such rings are used in telescoping relationship and one of the rings is vertically displaceable, the ring defining a variable lateral cross-section designed for linear pressure characteristics with axial displacement of one of the rings.

3,834,128

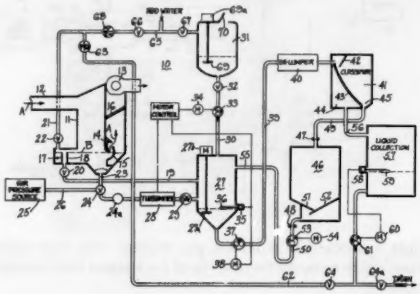
LIQUID CLARIFYING APPARATUS FOR REMOVING PARTICLES FROM A GAS STREAM

Gregory E. Gardiner, Cromwell, Conn., assignor to Environmental Maintenance Corp., Orange, Conn.

Filed Dec. 4, 1972, Ser. No. 311,864

Int. Cl. B01d *47/02*

U.S. Cl. 55—228 **3 Claims**



Apparatus for treating a scrubbing liquid to remove coagulants and suspended particulate matter before reuse or discharge of liquid where the suspended particles are caused to flocculate onto the coagulants.

3,834,129

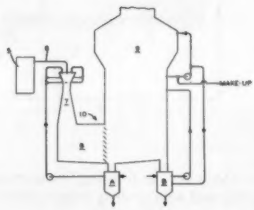
ABSORPTION OPTIMIZATION APPARATUS

Edward P. Darlinger, 693 Robinson Ave., Barberton, Ohio 44203; William Downs, 3945 S. Mahoning Ave., and Jack F. Stewart, 88 Overlook Dr., both of Alliance, Ohio 44601

Filed Sept. 13, 1972, Ser. No. 288,842

Int. Cl. B01d *47/06*

U.S. Cl. 55—242 **7 Claims**



A wet scrubbing module for removal of particulate matter and gaseous sulphur oxides from flue gases where the liquid effluents from particulate removal and gaseous sulphur oxide absorbtion is separated to minimize intermixing of the wet scrubbing materials.

3,834,130

HYDROCARBON TRAP

Kadry K. Bissada, and Jean B. Allison, both of Houston, Tex., assignors to Texaco Inc., New York, N.Y.

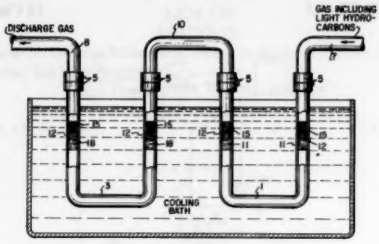
Filed Nov. 1, 1972, Ser. No. 302,715

Int. Cl. B01d *53/04*

U.S. Cl. 55—316 **5 Claims**

Apparatus includes U-tubes having quick disconnect self-sealing connectors in which one U-tube is packed with activated alumina which is held in place by glass wool and wire gauze. Another U-tube includes activated charcoal held in place by glass wool and wire gauze. When the U-tubes are im-

mersed in a cooling bath, they trap light hydrocarbons from a gas passing through them. The U-tube with the activated alumina traps light hydrocarbons above methane in molecular



weight while the U-tube with the activated charcoal traps any methane that has passed through the activated alumina U-tube.

3,834,131

ROLLER WEB FILTER FOR PURIFICATION OF GAS

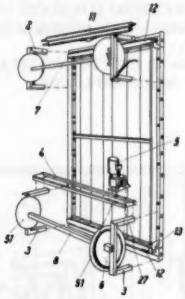
Gerhard Max Neumann, Berlin, Germany, assignor to Delbag Luftfilter Gesellschaft Mit Beschrankter Haftung, Berlin, Germany

Claims priority, application Germany, Sept. 14, 1971, 354206

Filed Sept. 13, 1972, Ser. No. 288,867

Int. Cl. B01d *46/22*

U.S. Cl. 55—354 10 Claims



A roller web filter for filtering gases particularly air in an air conditioning plant, wherein reeling up and unreeling rollers are provided for the filter web and supporting grids situated at either side of the filter web and between the rolls. The roller web filter comprises a fitting frame consisting of angle sections in the form of a double U-rail, forming a separate installation unit and receiving the sealing sections situated at either side of the filter web, the supporting grids and the deflecting rollers for the filter web. The reeling and unreeling rolls, driving assembly for the filter web and the carrying element for the sheathing cowl may be bolted or screwed to the frame.

3,834,132

APPARATUS FOR CLEANING EXHAUST AIR FROM A WORKSHOP

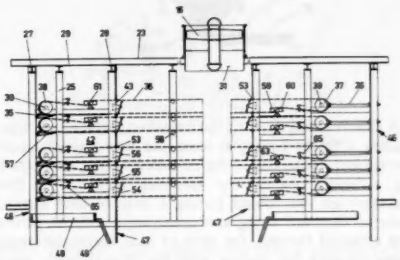
Erwin Moser, and Helmut Benda, both of Rheinfelden, Germany, assignors to Swiss Aluminium Ltd., Chippis, Switzerland

Filed June 26, 1972, Ser. No. 266,482

Claims priority, application Switzerland, June 30, 1971, 9650/71

Int. Cl. B01d *47/06*

U.S. Cl. 55—223 16 Claims



Apparatus for cleaning exhaust air from a workshop, including a vertically-extending duct which is rectangular in horizontal cross section, a sheet of filter material in a horizontal plane covering the cross section of the duct, means for moving the filter material in the direction of the length of the cross section, and means for cleaning the filter material.

3,834,133

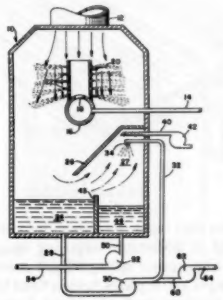
DIRECT CONTACT CONDENSER HAVING AN AIR REMOVAL SYSTEM

William J. Bow, Morristown, N.J., assignor to Foster Wheeler Corporation, Livingston, N.J.

Filed Dec. 22, 1972, Ser. No. 317,862

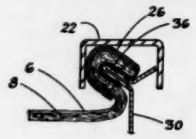
Int. Cl. B01d *57/00*

U.S. Cl. 55—257 7 Claims



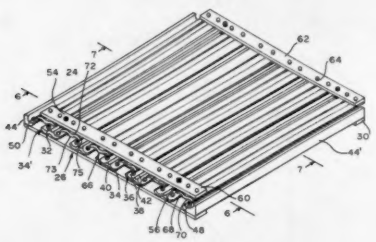
A direct contact condenser in which a plurality of streams of water are discharged in a housing in a heat exchange relationship with steam passing therethrough to condense a portion of the steam. The condensed steam is reheated by redirecting the noncondensed steam in a heat exchange relation therewith, to remove air and other non-condensible gases from the condensed steam.

3,834,134
FLUID TIGHT SEAL FOR FLUID TREATING FILTER
Robert L. McAllister, Louisville, Ky., assignor to America Air Filter Company, Inc., Jefferson County, Ky.
Filed Nov. 15, 1972, Ser. No. 306,930
Int. Cl. B01d *39/00*
U.S. Cl. 55—378 4 Claims



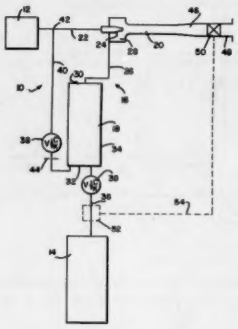
A fluid treating filter of the extended surface area type including a frame having at least one flow-through aperture therein and a filter bag of the extended surface area type having a mouth therein for receiving fluid to be filtered therethrough, the mouth having a strip of heat shrinkable material disposed along and coextensive with its perimeter and attached thereto, the strip of heat shrinkable material being adapted for mating with the flow-through aperture frame upon subjecting the shrinkable material to heat treating conditions sufficient to shrink the material to form a fluid tight seal with the frame.

3,834,135
GREASE FILTER
Anthony Jordan, 262 Great River Rd., Great River, N.Y.
Filed Oct. 2, 1973, Ser. No. 402,792
Int. Cl. B01d *45/08*
U.S. Cl. 55—444 8 Claims



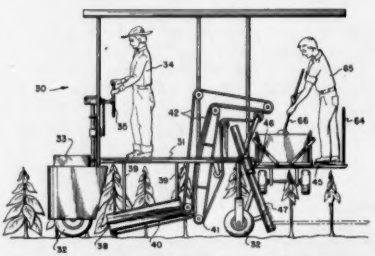
A grease filter unit comprises upper and lower baffle plate assemblies held in adjustable opposing spaced position by bolts carrying compressed springs. Each assembly includes a plurality of straight baffle plates held in fixed laterally or transversely spaced positions by flat end bars. Each plate has a pair of transversely curved laterally spaced flanges integral with a central bridge portion constituting a partition to define two spaced parallel channels. Bridge portions of one assembly are formed with longitudinal grooves while bridge portions of the other assembly are formed with apices, to define sinuous channels for collecting grease separated centrifugally from grease laden air passing through the unit. Ends of the grooves and channels are open to drain the grease from the baffle plates.

3,834,136
GAS DRYING APPARATUS AND METHOD
Jules L. Dussourd, Princeton, and Ronald L. Haugen, Pennington, both of N.J., assignors to Ingersall Rand Company, Woodcliff Lake, N.J.
Filed Apr. 10, 1973, Ser. No. 349,655
Int. Cl. B01d *53/04*
U.S. Cl. 55—33 10 Claims



The subject apparatus was devised for compressed gas drying systems which typically use vacuum-producing devices for evacutating a gas drying desiccant chamber. The invention comprises the use of an ejector for evacuating the gas drying desiccant chamber, in a first mode of operation, and the use of the ejector as a simple fluid conductor or connector, for directing compressed gas to the desiccant chamber, in a second mode of operation. A fluid-signal control valve opens and closes the ejector outlet, to effect the first and second modes of operation. The method comprises closing off an ejector diffusor to cause cycling or shunting of the gas directed thereinto to the vacuum port of the ejector.

3,834,137
METHOD AND APPARATUS FOR HARVESTING AND TREATING TOBACCO
William R. Long, Tarboro, N.C., assignor to Long Mfg. N. C., Inc., Tarboro, N.C.
Filed Mar. 2, 1973, Ser. No. 337,622
Int. Cl. A01d *91/04*
U.S. Cl. 56—27.5 3 Claims



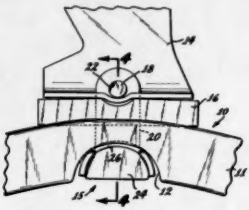
Method and apparatus for selectively priming and removing tobacco leaves from a stalk without damage and automatically transferring such leaves onto a relatively large tobacco rack in a random haphazard manner, after which a plurality of frames, each of which includes multiple tines, are attached to the rack so that the tines pierce the tobacco leaves to hold such leaves in position. Thereafter the rack is rotated to an upright posi-

tion to form a substantially uninterrupted column of tobacco leaves which is placed in a curing barn so that air under controlled conditions of temperature, humidity and pressure is caused to flow through the columns of tobacco leaves for curing the same.

3,834,138
FASTENER

Duane M. Gibson, Milwaukie, Oreg., assignor to Omark Industries, Inc., Portland, Oreg.

Filed Oct. 4, 1972, Ser. No. 296,063
Int. Cl. A01d *55/24*
U.S. Cl. 56—290 **2 Claims**

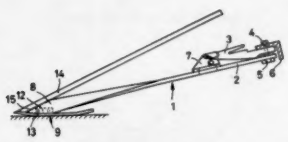


A fastener for fastening working elements to a flexible carrier belt including a stem with an insertable end portion adapted to fit through aligned slots in a washer and the carrier belt which end is fastened under tension to the working element. The belt, at the location of the slot, is undercut to form a cog like notch and the washer is bowed to fit the notch. The trailing end of the stem is flared so as to mate with the bowed washer which prevents the stem from being pulled through the carrier belt.

3,834,139
DEVICE FOR SUPPORTING THE CUTTING MECHANISM ON A HARVESTING MACHINE

Gustav Schumacher, II, and Gunter Schumacher, both of Haus No. 51, 5231 Eichelhardt, Germany

Filed Feb. 20, 1973, Ser. No. 334,086
Claims priority, application Germany, Feb. 21, 1972, 2207959
Int. Cl. A01d *55/13*
U.S. Cl. 56—313 **9 Claims**

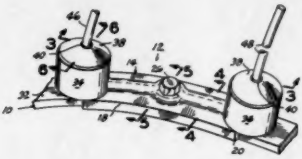


A harvester which has a cutting mechanism and an elongated springy support arm which in an operative position extends forwardly and downwardly from the cutting mechanism with this support arm having an upper rear end region and a lower front end region. The springy support arm carries a shoe which extends rearwardly from its lower front end region beneath the support arm to glide along the ground. The elongated springy support arm is operatively connected with the cutting mechanism for bending around a horizontal axis which extends across the support arm at its upper rear end region while remaining rigid forwardly of the upper rear end region in response to vertical forces which act to deflect the support arm at its lower front end region. In this way the shoe is tilted when encountering these vertical forces to a lesser extent than if bending occurred at the lower front end region of the support arm or at a location therealong closer to the lower front end region than the upper rear end region.

3,834,140
HAY RAKE TOOTH AND MOUNTING BASE

Willie Delfino, Rt. No. 7 Box 148, Bakersfield, Calif. 93307

Filed Aug. 20, 1973, Ser. No. 390,135
Int. Cl. A01d *77/00*
U.S. Cl. 56—400 **5 Claims**

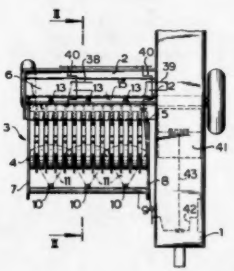


A dual tooth for a side delivery hay rake is secured to the rim of the hay rake wheel by a bolt passing through a reuseable recessed base and the rim of the rake wheel. The respective ends of the base is provided with outstanding resilient members respectively surrounding the teeth at their end portions adjacent the rake wheel rim to cushion stress applied to the teeth.

3,834,141
PICK-UP BALER, SPRAYER AND COMPACTOR COMBINATION

Karl Friedrich Bracht, Hotzum; Herbert A. Strube, and Hans Otto Sacht, both of Wolfenbuttel, all of Germany, assignors to Gebrueder Welger, Wolfenbuettel, Germany

Filed Jan. 17, 1973, Ser. No. 324,398
Claims priority, application Germany, Jan. 18, 1972, 2202114
Int. Cl. A01d *39/00*
U.S. Cl. 56—341 **15 Claims**

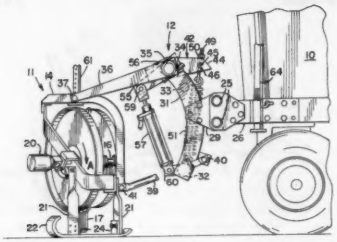


A pick-up baler for agricultural crops including means to pick up the crop and to direct the flow of the material from a pick-up device as a sheet over an intermediate conveyor into a bale chamber for spraying the picked-up swath with a liquid preserving agent, subsequently to which the swath is compressed.

3,834,142
SIDE DELIVERY RAKE

Edward J. Johnston, Grange Park; Frank J. Macha, Jr., Lockport, both of Ill.; William H. Knapp, and Peter J. Peacock, both of Memphis, Tenn., assignors to International Harvester Company, Chicago, Ill.

Filed June 8, 1973, Ser. No. 368,144
Int. Cl. A01d 77/06
U.S. Cl. 56—377 26 Claims

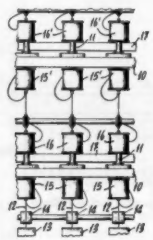


A side delivery rake is provided with mounting apparatus for attaching it to the front of a tractor. The mounting apparatus comprises connecting linkage and hydraulic lift linkage with an interconnection, preferably a rotary lost motion connection, between the connecting linkage and the hydraulic lift linkage to permit floatation of the rake independent of the lift linkage during operation.

3,834,143
SPINDLE UNIT FOR TEXTILE MACHINE

Carlo Menegatto, Viale Sicilia 108/10, Monza, Italy (20052)

Filed Oct. 25, 1973, Ser. No. 409,664
Claims priority, application Italy, Dec. 1, 1972, 32411/72
Int. Cl. D02g 3/36, 3/38
U.S. Cl. 57—16 7 Claims

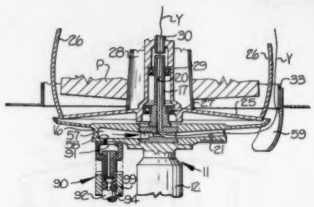


In a textile machine, a spindle unit for carrying yarn spools for covering a continuous core caused to pass through said unit, comprising a first spindle facing in one direction, and a second spindle coaxial with and facing in opposite direction to the first spindle. The two spindles in each unit are made fast with each other to rotate in one same direction to enable the spiral winding on said core for a first covering yarn and then a second covering yarn in the same direction and between the coils of the previously wound yarn.

3,834,144
APPARATUS FOR RE-POSITIONING THE SPINDLE ROTOR AND FOR ACTUATING PNEUMATIC THREADING MECHANISMS OF A TEXTILE YARN PROCESSING MACHINE

Gustav Franzen, Krefeld, Germany, assignor to Palitex Project Company GmbH, Krefeld, Germany

Filed Oct. 18, 1973, Ser. No. 407,504
Claims priority, application Germany, Apr. 21, 1973, 2320392
Int. Cl. D01h 7/86, 1/10
U.S. Cl. 57—34 R 18 Claims

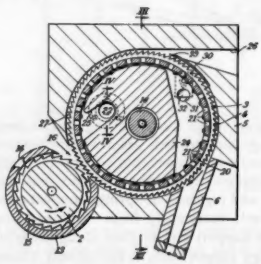


In a textile yarn processing machine, such as a twister, spinning frame or the like, having a plurality of spindle assemblies and each spindle assembly including a driven rotating rotor mechanism; the improvement of selectively operable devices for re-positioning the spindle rotor mechanism to a predetermined threading position for threading up of the spindle assembly. The re-positioning devices include a nozzle for directing a jet of compressed air eccentrically and obliquely against the underside of the rotor mechanism for rotating the rotor mechanism to re-position the rotor mechanism. The spindle assembly further desirably includes air operated devices for threading the yarn through the spindle assembly and the re-positioning devices further preferably include devices for actuating the threading devices upon completion of the operation of the re-positioning devices.

3,834,145
OPEN-END SPINNING OF TEXTILE YARNS

Bruce Ellingham, Nelson, and Andrew Alexander Chisholm, Clitheroe, both of England, assignors to Platt International Limited, Oldham, Lancashire, England

Filed Aug. 10, 1972, Ser. No. 279,335
Claims priority, application Great Britain, Aug. 11, 1971, 37753/71
Int. Cl. D01h 1/00, 1/12
U.S. Cl. 57—56 13 Claims



An apparatus for the open-end spinning of textile yarns includes improved means for extracting impurities (removing

trash) from the fibrous material before it is fed to the spinning zone. The apparatus comprises conveying means for conveying fibrous material from feed means to the spinning means along a conveying path in which the fibres are subjected to an opening action, the conveying means including a rotating roller having an apertured peripheral wall on the outer surface of which the opened fibres or the fibres being opened are conveyed and suction means for applying suction internally of the roller to remove impurities from the fibres and withdraw the impurities through apertures in the peripheral wall.

3,834,146

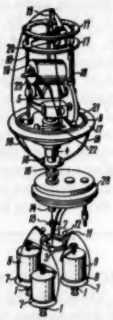
DEVICE FOR TWISTING NATURAL AND SYNTHETIC FIBRE YARNS INTO A SINGLE THREAD

Andrei Maximilianovich Nessler, ulitsa Bela Kuna, 19, korpus 1, kv. 8; Frants Ivanovich Raag, ulitsa Stakhanovtsev, 10, korpus 4, kv. 10; Maria Pavlovna Savelieva, ulitsa Torzhkovskaya, 2, korpus 3, kv. 30; Agrippina Gavrilovna Vikhrova, ulitsa Khalturina, 8, kv. 34, and Leonid Sergeevich Dmitriev, Poljustrovsky prospekt, 29, kv. 38, all of Leningrad, U.S.S.R.

Continuation of Ser. No. 28,744, April 15, 1970, abandoned. This application Aug. 2, 1972, Ser. No. 277,151

Int. Cl. D01h *1/10, 13/30*

U.S. Cl. 57—58.54 **2 Claims**



A device for twisting natural and synthetic fibre yarns together into a single thread, comprising a double-twist receiving spindle made vertical with a horizontal winding drum; a cabling bath with an impregnating fluid mounted under said receiving spindle; and double-twist delivery spindles mounted under the bath so that the axes of rotation of their disks are disposed in different planes passing through the axis of rotation of the receiving spindle's disk, and each of these axes is equally spaced from said axis of rotation.

3,834,147

STRAND TWISTING ARRANGEMENT FOR AN OPEN-ENDED YARN SPINNING SYSTEM

Zdenek Havranek; Miroslav Jiskra, both of Usti nad Orlici; Miroslav Kubovy, Dolni Dobrouc; Josef Stary, Usti nad Orlici, and Vera Vierikova, Dlouha Trebova, all of Czechoslovakia, assignors to Vyzkumny ustav bavlnarsky, Usti nad Orlici, Czechoslovakia

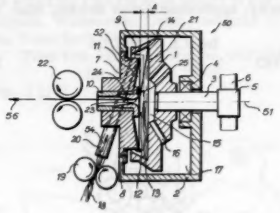
Filed Oct. 15, 1973, Ser. No. 406,633

Claims priority, application Czechoslovakia, Oct. 16, 1972, 6956-72

Int. Cl. D01h *7/00, 1/12*

U.S. Cl. 57—58.89 **8 Claims**

A funnel-shaped strand twisting head in an open-ended yarn spinning system has a working region that includes circumferentially alternating roughened and smooth portions. The head is disposed between a pair of strand advancing rolls and a rotating spinning chamber from which the strands are payed out. During each revolution of the spinning chamber in a forward direction, the advancing strands alternately contact the rough and smooth portions of the head. As a result, a reverse



twist is superimposed on the normally forward-twisted strands to strengthen the strands in the region between the head and the spinning chamber and to maintain the twist point in the chamber at a fixed location.

3,834,148

RINGLESS SPINNING APPARATUS

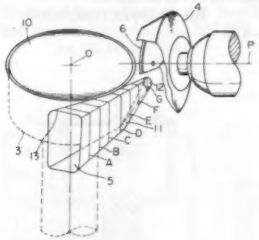
Waichi Sakurai; Takeshi Igarashi, and Osamu Yuasa, all of Fukui, Japan, assignors to Daiwa Boseki Kabushiki Kaisha, Osaka and Kabushiki Kaisha Toyoda Jodoshokki Seisakusho, Kariya City, Aichi-ken, both of, Japan

Filed Mar. 22, 1973, Ser. No. 344,035

Claims priority, application Japan, Mar. 27, 1972, 47-30433; Mar. 27, 1972, 47-30434

Int. Cl. D01h *1/12*

U.S. Cl. 57—58.95 **5 Claims**



In a ringless spinning apparatus of the type comprising a feed roller rotatable about its vertical axis for feeding fibrous materials, an opening roller rotatable about its vertical axis and provided with a plurality of saw tooth wires wound circumferentially around the peripheral surface thereof for opening the fibrous materials fed by said feed roller, channel means arranged adjacent the peripheral surface for taking off the opened fibrous materials from the opening roller and transferring them by the action of a jet of air passing therein, and a rotary spinning chamber for collecting and spinning the opened fibrous materials transferred thereinto from the channel means, the latter converges toward the spinning chamber by tapering at least one of the upper and lower walls thereof, while the sectional area of the channel means is progressively reduced toward the spinning chamber at the downstream side of the opening roller.

3,834,149

IMPROVEMENTS IN WIRE ROPES, STRANDS AND WIRE ROPES PRODUCED THEREFROM

Alexander Nisbet, Kilcreggan, Scotland, assignor to Dawson & Usher Limited, Sunderland, England

Filed Nov. 28, 1972, Ser. No. 310,145

Claims priority, application Great Britain, Mar. 11, 1971, 55552/71

Int. Cl. D07b *1/06*

U.S. Cl. 57—145 11 Claims

The invention relates to the construction of wire rope strands and ropes produced therefrom in which each strand is constructed in known manner from steel wires but includes at least one control element in the form of a metallic zinc or aluminium element which may be in the form of a wire or wires or a foil wrapping or coating to prevent or reduce oxidation of the steel wires, the control element being conductively in contact with the steel wires and being surrounded by steel wires to protect it against abrasion.

3,834,150

METHOD FOR FORMING TWISTED FILAMENTARY MATERIAL

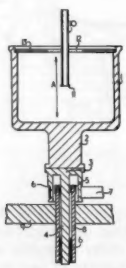
Roger James Ottewell, Birmingham, and Peter Lothar Ernst Moring, Walmley, both of England, assignors to Dunlop Limited, London, England

Filed Jan. 30, 1973, Ser. No. 327,936

Claims priority, application Great Britain, Feb. 1, 1972, 4539/72; Sept. 16, 1972, 43062/72

Int. Cl. D01h *1/08, 9/06*

U.S. Cl. 57—156 8 Claims



An apparatus and method of forming a twisted yarn and a doubled cord in which yarn twisting is carried out by feeding a yarn by means of a feed device into a rotating hollow member, temporarily storing the yarn and subsequently reversing the direction of the feed device to remove the yarn and give it further twist. Two or more yarns may then be folded together to form a cord and this is preferably carried out whilst passing the twisted yarns into a further rotating member, of which the following is a Specification.

3,834,151

TIMEPIECE WITH AUTOMATIC CALENDAR

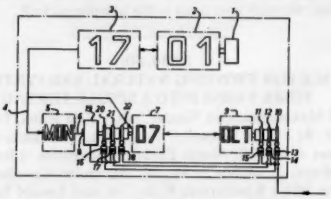
Pierre Bodet, 49340, Trementines, France

Filed Apr. 3, 1973, Ser. No. 347,436

Claims priority, application France, Apr. 6, 1972, 72.12122; Nov. 8, 1972, 72.39465

Int. Cl. G04d *19/24;* G09d *3/08*

U.S. Cl. 58—4 A 9 Claims



A timepiece has an automatic calendar with a correcting means that takes account of the months having less than 31 days, and leap years. The correcting means, and preferably also the timepiece itself, is electrically actuated, as by a battery carried by the timepiece. The month indicator of the calendar drives slowly rotating cams that close first electrical contacts on February 28, February 29, and the last day of each month having 30 days. The day of the month indicator is driven by mechanism that also turns relatively rapidly rotating cams once a day that close second electrical contacts at midnight. There are three pairs of first and second contacts in series with each other and with an electric motor or electromagnetic device; and the cams of the second contacts ensure that each pair of contacts will be closed the correcting means thus actuated, for an interval or a number of pulses sufficient to advance the day of the month indicator to skip one, two or three days at the end of each month having less than 31 days.

3,834,152

TIME CORRECTION DEVICE FOR ELECTRONIC TIMEPIECES

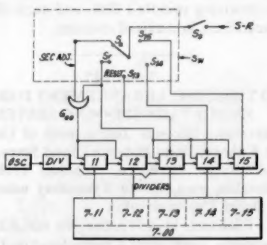
Izuhiko Nishimura, and Akio Shimoi, both of Suwa, Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Sept. 7, 1972, Ser. No. 287,201

Claims priority, application Japan, Sept. 8, 1971, 46-69575; Sept. 10, 1971, 46-70116

Int. Cl. G04c *3/00;* G04b *19/30*

U.S. Cl. 58—23 R 15 Claims



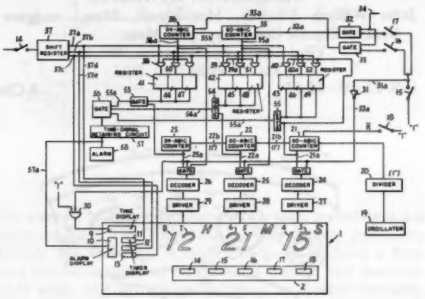
In an electronic timepiece having a plurality of display elements, a primary manually operable switch member is provided for selecting at least one of the display elements for independent setting or correction and a second manually operated switch element is provided for setting or correcting said selected one or more display elements.

3,834,153

ELECTRONIC TIMEPIECE WITH A MULTI-TIMER

Kazuhiro Yoda, and Takashi Kato, both of Tokyo, Japan, assignors to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

Filed Oct. 18, 1972, Ser. No. 298,490
Claims priority, application Japan, Oct. 19, 1971, 46-82649
Int. Cl. G04c *21/00*
U.S. Cl. 58—38 7 Claims



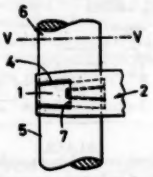
An electronic timepiece constructed as a wristwatch with a multiplicity of timer devices for setting therein different time settings either by actuation of setting switches or by reading in the time settings from a program in the form of a punched tape. The settings are introduced into the watch's electronic circuit without affecting its outputs indicating elapsed time. The time settings are stored and the wearer of the watch is warned by a bell or a light, visually or audibly when the actual time corresponds with the time setting memorized in registers forming the memories of the electronic circuit. The time set and the elapsed or actual time can be displayed on a display panel of the timepiece.

3,834,154

DEVICE FOR FASTENING THE INNER END OF A MAINSPRING TO THE BARREL ARBOR OF A CLOCKWORK

Urs Giger, Solothurn, Switzerland, assignor to ETA A. G. Erbauches-Fabrik, Grenchen (Soleure), Switzerland

Filed Jan. 15, 1974, Ser. No. 433,479
Claims priority, application Switzerland, Feb. 9, 1973, 1905/73
Int. Cl. G04b *1/18*
U.S. Cl. 58—87 5 Claims



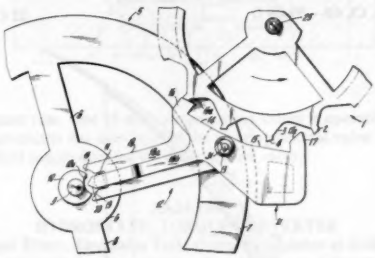
Means for fastening the inner end of a mainspring to the barrel arbor of watch movements, clock movements, etc., in which the end of the mainspring is wound in at least two turns on the smooth cylindrical surface of the barrel arbor. In order that the two turns be in contact with the arbor, the mainspring is cut in the shape of an isosceles triangle at its end and has a triangular opening having two sides parallel to the edges of the blade of the mainspring and a base. The proportions selected permit the winding of the tip of the mainspring on the arbor. As a variant, the mainspring could also be cut with a tongue having oblique parallel edges.

3,834,155

OFFSET PALLET LEVER FOR WATCH ESCAPEMENT

Paul Wuthrich, Watertown, Conn., assignor to Timex Corporation, Waterbury, Conn.

Filed Feb. 19, 1974, Ser. No. 443,281
Int. Cl. G04b *15/08*
U.S. Cl. 58—121 R 7 Claims



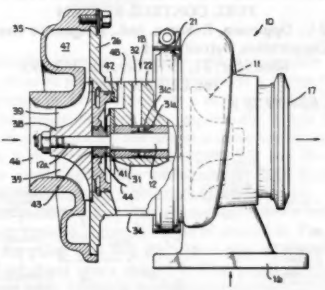
An improved escapement mechanism for a horological device, especially a watch, with an improved pallet lever construction for coupling a conventional escape wheel and balance wheel. The pallet lever is constructed so that it can be pivotably mounted on an axis that lies within the outer diameter of the balance wheel by means of an offset portion passing around the balance wheel. The pallet lever is preferably an integral plastic member.

3,834,156

ENGINE TURBOCHARGING SYSTEM WITH VENTED COMPRESSOR BEARING

John Frederick Cutler; Robert Andrew Edwards, both of Indianapolis, and Charles Richard Sarle, Noblesville, all of Ind., assignors to Wallace-Murray Corporation, New York, N.Y.

Filed Jan. 10, 1973, Ser. No. 322,375
Int. Cl. F02b *37/04*
U.S. Cl. 60—597 6 Claims



Disclosed is a combination of a spark ignition internal combustion engine and an exhaust gas driven turbocharger whose compressor component delivers charge air to the air induction system of the engine downstream of the engine carburetor and air cleaner. A tube provides communication between the crankcase of the engine and the impeller shaft bearing housing of the turbocharger compressor component to thereby permit

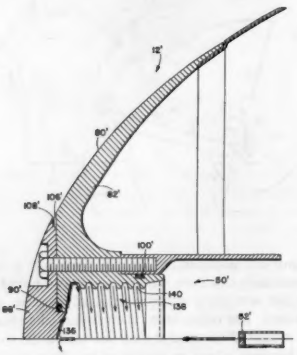
entry of crankcase gases into the bearing housing thereby eliminating the ingestion of bearing lubricating oil along the impeller shaft and through the impeller shaft bearing into the compressor discharge passage when a vacuum condition exits in the compressor component as for example under engine idle condition.

3,834,157

SPINNER DE-ICING FOR GAS TURBINE ENGINES

Ambros S. Hoffmann, West Haven, Conn., assignor to Avco Corp., Stratford, Conn.

Filed Feb. 5, 1973, Ser. No. 329,719
Int. Cl. F02c *7/06*
U.S. Cl. 60—39.09 D **22 Claims**



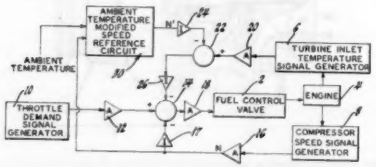
The inlet spinner of a gas turbine engine is de-iced by directing a stream of heated lubricant from the lubrication system of a gas turbine engine against a generally concave heat transfer surface formed on the interior of the inlet spinner. The heat transfer surface is formed to maximize the transfer of heat from the lubricating fluid to those portions of the exterior surface of the spinner that tend to accumulate ice. The heat transfer surface also provides a pumping action which produces a continuous flow of lubricant across it.

3,834,158

VOLTAGE GENERATING CIRCUIT FOR A GAS TURBINE FUEL CONTROL SYSTEM

Richard C. Oppmann, Kokomo, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 21, 1973, Ser. No. 343,295
Int. Cl. F02c *9/04*
U.S. Cl. 60—39.28 R **4 Claims**



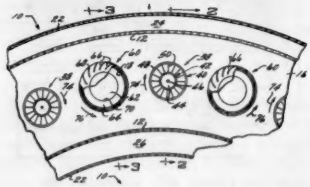
In a fuel control system for a gas turbine engine, a fuel flow limiting signal is obtained from the difference between a voltage proportional to turbine inlet temperature and a voltage produced by an ambient temperature modified speed reference circuit. In the latter circuit, a first differential comparator passes the greater of a voltage proportional to compressor speed and a first reference voltage. A second differential comparator passes to the circuit output the lowest of the output of the first differential comparator, a second reference voltage and a third reference voltage which varies with ambient air temperature.

3,834,159

COMBUSTION APPARATUS

John William Vdoviak, Marblehead, Mass., assignor to General Electric Company, Lynn, Mass.

Filed Aug. 3, 1973, Ser. No. 385,420
Int. Cl. F02c *3/00, 7/22*
U.S. Cl. 60—39.65 **8 Claims**



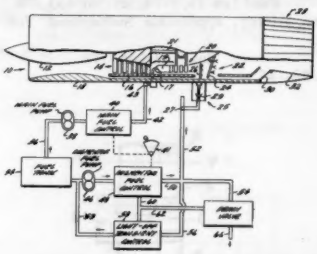
A combustion apparatus is provided for a gas turbine engine wherein a plurality of fuel carbureting air swirlers are alternately spaced between a plurality of stabilizing air swirlers in order that fuel may be readily dispersed and atomized for efficient combustion within the chamber without precipitating excessive exhaust smoke and without jeopardizing flameholding stability within the combustion chamber.

3,834,160

LIGHT-OFF TRANSIENT CONTROL FOR AN AUGMENTED GAS TURBINE ENGINE

John Theodore Moehring, Cincinnati, Ohio, and Thomas Norman Totten, Sr., Burnthills, N.J., assignors to General Electric Company, Lynn, Mass.

Filed Mar. 26, 1973, Ser. No. 344,871
Int. Cl. F02k *3/10*
U.S. Cl. 60—243 **8 Claims**



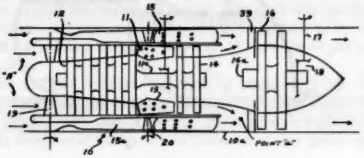
A light-off transient control is provided for an augmented gas turbine engine and indirectly controls the rate of fuel flow to a plurality of augmentor fuel injectors. This is accomplished by bypassing a portion of the fuel flow metered from an augmentor fuel control for a limited time during ignition of augmentation in order to achieve a smooth and uniform thrust increase when the engine power control lever is advanced into the augmentor region of operation. The light-off transient control provides for quick filling of the feedlines and manifolds leading to the augmentor fuel injectors and also permits non-augmented operation with the manifolds drained in order to prevent the fuel injectors from coking.

3,834,161

DUAL MODE AUXILIARY POWER UNIT

Richard E. Quigley, Jr., Kettering, and Buryl L. McFadden, Jr., Dayton, both of Ohio, assignors to The United States of America as represented by the Air Force, Washington, D.C.

Filed June 1, 1973, Ser. No. 365,908
Int. Cl. F02k 3/12
U.S. Cl. 60—244 **10 Claims**



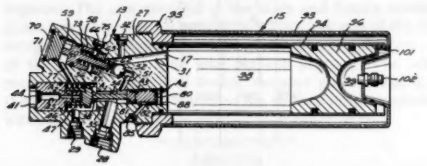
An aircraft on-board auxiliary power unit including a gas turbine-core and ram combustor uninterruptedly producing relatively low and high velocity hot gases to drive a free, power turbine positioned downstream thereof and interconnected with, and driving an auxiliary equipment-operating shaft to thereby provide a turboramjet aircraft with all flight vehicle power requirements throughout its entire operating regime, including ground standby.

3,834,162

CONTROL VALVE FOR MOTOR VEHICLE FLUID POWER CIRCUIT

Frederick D. Keady, Arlington, Mass., assignor to The Weatherhead Company, Cleveland, Ohio

Filed Apr. 23, 1973, Ser. No. 353,248
Int. Cl. G05d 11/00
U.S. Cl. 60—418 **14 Claims**



A motor vehicle fluid power circuit is disclosed which includes a constant displacement pump driven by the engine of the vehicle, a control valve, an open center steering valve, a brake booster accumulator, and a closed center brake booster. The entire output of the pump flows through the control valve under all conditions, and the control valve selectively directs the pump output to the steering valve to assist in steering the vehicle or to the brake booster accumulator (which is hydraulically connected to the brake booster) to assist in braking.

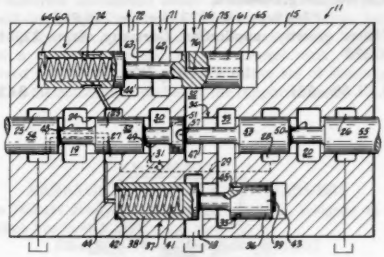
3,834,163

CONTROL VALVE FOR HYDRAULICALLY OPERATED IMPLEMENTS

Raud A. Wilke, Brookfield, Wis., assignor to Koehring Company, Milwaukee, Wis.

Filed Nov. 29, 1972, Ser. No. 310,375
Int. Cl. F15b 11/16
U.S. Cl. 60—422 **6 Claims**

An implement having separate pumps to supply pressure fluid to the inlet ports of a pair of hydraulic control valves, one of which governs the operation of steering control mechanism. A pair of pressure compensating valves, responsive to the pressure differential between the inlet and motor ports of the steering control valve, cooperate to maintain flow of pressure fluid to a selected motor port of the latter at a substantially constant rate. One of said compensating valves is operable to communicate the inlet port of the steering control valve with the fluid supply duct for the other control valve.

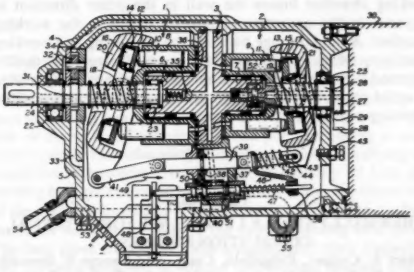


3,834,164

HYDROSTATIC TORQUE CONVERTER

Kaspar Ritter, Kirchheim Teck, Germany, assignor to KOPAT Gesellschaft, fur Konstruktion Entwicklung und Patent Verwertung M.b.H. & Co., K.G., Boll, Kreis Goppingen, Germany

Filed Jan. 24, 1973, Ser. No. 326,443
Claims priority, application Germany, Jan. 26, 1972, 2203478; Dec. 30, 1972, 2264319
Int. Cl. F16h 39/46
U.S. Cl. 60—492 **8 Claims**



A hydrostatic torque converter which comprises a joint housing, an axial piston-pump to constitute a pump part and an axial piston-motor to constitute a motor part with variable feeding- and absorption-volume, respectively, within the joint housing, in particular for the use as a drive controlled in accordance with the output requirement for the drive of a generator operating with a comparatively high number of revolutions variable at a ratio of about 1:5 by means of an internal combustion engine with an essentially lower number of revolutions variable in turn at a ratio of about 1:6. The volume ratio of the pump part and the motor part of the converter amounts to about more than 1:1. The pump part and the motor part have swinging bodies rotatably mounted in the housing. A servo setting cylinder, a piston reciprocating therein, and a rod mechanism are coupled together. The swinging bodies are controlled by the servo cylinder with the piston by means of said mechanism such, that the output speed of the converter corresponds with the desired generator driving output which is maintained by variation of the feeding quantity of the axial piston-pump and for the absorption quantity of the axial piston-motor independent from the input speed of the converter.

3,834,165

THERMAL ACTUATOR

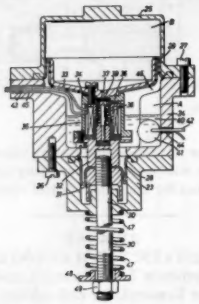
Heino Arff, Henstedt-Ulzburg, Germany, assignor to Danfass A/S, Nordborg, Denmark

Filed Sept. 18, 1972, Ser. No. 290,092

Claims priority, application Germany, Sept. 22, 1971, 2147292

Int. Cl. F03g 7/06

U.S. Cl. 60—531 8 Claims



The invention relates to a thermal actuator which comprises adjacent expansible equalizing and working chambers separated by a movable wall to which is connected an actuating member for operating a valve or the like. Spring means bias the wall in one direction and an expansible fluid in the working chamber biases the wall in the other direction in response to the operation of heating means in the working chamber. A fluid passage between the equalizing and working chambers which is controlled by an electromagneticallly operated valve permits a rapid return of the separating wall to its initial position which in turn permits the rapid return of the actuating member to its initial position.

3,834,166

THERMALLY STABLE LUBRICANTS FOR EXTERNAL COMBUSTION ENGINES

Robert A. Cupper, Ridgefield, Conn., and George S. Somekh, New Rochelle, N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Filed Apr. 13, 1973, Ser. No. 350,800

Int. Cl. F01k 25/00

U.S. Cl. 60—651 8 Claims

Alkylated aromatic hydrocarbons have been found to serve as lubricants, exhibiting excellent thermal stability, for Rankine Cycle Engines especially when using aqueous nitrogen-containing hydrocarbon motive fluids.

3,834,167

COLLAPSIBLE DAM AND DAMMING METHOD

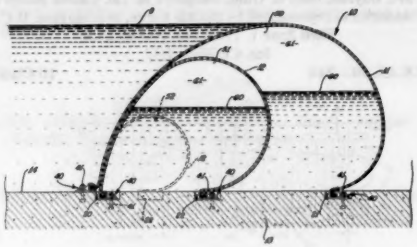
Loring E. Tabor, Los Angeles, Calif., assignor to N. M. Imbertson & Associates, Inc., Burbank, Calif.

Filed Dec. 6, 1972, Ser. No. 312,653

Int. Cl. E02b 7/04

U.S. Cl. 61—30 4 Claims

An inflatable envelope type collapsible dam is made up of a plurality of inflatable envelopes one inside the other. The dam is mounted across a watercourse with the upstream edges of each of the envelopes anchored at substantially the same location. The dam may be constructed to a selected height by appropriately setting the pressures in each of the envelopes and



each inner envelope operates to support a predetermined portion of the water pressure against their outer envelope or envelopes.

3,834,168

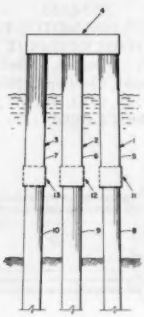
SLIP-JOINTED PILE AND DOLPHIN CONSTRUCTION

Myle J. Holley, Jr., 1364 Mass Ave., Lexington, Mass. 02173

Filed Mar. 13, 1973, Ser. No. 340,867

Int. Cl. E02d 5/22; E02b 17/00

U.S. Cl. 61—46 14 Claims



A marine pile formed by upper and lower lengths of pipe interconnected by a slip-coupling which permits a predetermined amount of axial displacement between these lengths of pipe. This construction has particular application to cluster dolphins of the type wherein the tops of the individual piles are rigidly interconnected.

3,834,169

METHOD AND APPARATUS FOR LAYING LARGE DIAMETER PIPELINE SEGMENTS OFFSHORE

Phillip Andrew Abbott, Houston, Tex., assignor to Brown & Root, Inc., Houston, Tex.

Filed July 11, 1973, Ser. No. 378,042

Int. Cl. F16l 1/00; B23p 19/04; B23q 3/14

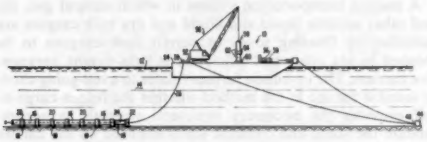
U.S. Cl. 61—72.3 21 Claims

A method and apparatus for laying a pipeline upon the bed of a body of water.

The apparatus includes a generally cylindrical male member operable to be positioned within the interior of one of a submerged pipeline segment and at least one pipeline segment to be laid. Operating in conjunction with the male member is a female member which is designed to be positioned within the interior of the other of the submerged pipeline segment and at least one pipeline segment to be laid. Expandable circum-

ferential friction collars are mounted upon the male and female members to releasably secure the members within the interior of the pipeline segments. A flexible cable is securely connected to one of the male and female members operably connected within the pipeline segment to be laid and extends through the other of the male and female members operably positioned within the interior of the submerged pipeline segment for aligning the male and female members within the body of water. Following alignment, the flexible cable may serve to pull the male and female members into stabbing engagement and one end of the pipeline segment to be laid into abutting contact with the free end of the submerged pipeline segment.

The method includes the steps of positioning one member of a male and female member guide assembly within the free end of a submerged pipeline segment and positioning the other member of the male and female member guide assembly



within at least one pipeline segment to be laid. The guide member positioned within at least one pipeline segment to be laid is fitted at one end with at least a first cable and at the other end with at least a second cable. The guide members and the at least one pipeline segment to be laid are lowered into body of water and the cables are tensioned to align the male and female member guide assembly within the body of water. Following alignment the male and female members of the guide assembly are interocnnected and stabbed into full engagement to position the pipeline segment to be laid in abutting contact with the free end of the submerged pipeline segment. The one member of the male and female member guide assembly which is connected to the free end of the submerged pipeline segment is then axially drawn to the free end of the thus laid at least one pipeline segment. The other member of the male and female member guide assembly is then disconnected and raised to the surface to be positioned within another at least one pipeline segment to be laid.

3,834,170

PROCESS OF, AND A PLANT FOR, CONSTRUCTING TUNNELS

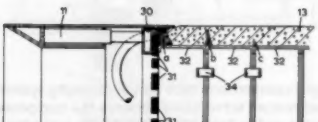
Armin Lobbe, Oberaden, and Wolf-Rudiger Von Schenck Zu Schweinsberg, Borstel Bei Winson/Luhe, both of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Wethmar near Lunen, Westfalia, Germany

Filed Sept. 26, 1972, Ser. No. 292,470

Claims priority, application Spain, Sept. 27, 1971, 395457; Nov. 12, 1971, 396949

Int. Cl. E01g *5/08, 5/16*

U.S. Cl. 61—84 **15 Claims**



A plant for use in tunnel constructions and having a drive shield with a cutting head for driving into a working face to advance the tunnel. A plurality of rams which act upon an abutment member are used to drive the shield forwards. The abutment member transmits the forces from the rams to a mass of fluid concrete introduced under pressure and supported on support means such as a tubular shell or series of rings spaced inwardly from the tunnel wall. The concrete when hardened forms a continuous lining for the tunnel wall. Water is removed from the fluid concrete with the aid of filters provided on the abutment member or the support means.

3,834,171

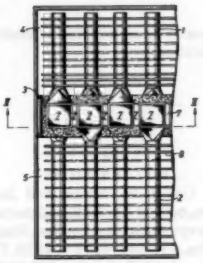
ARRANGEMENT IN HEAT EXCHANGERS

Allan Hilbert Johansson, Enkoping, Sweden, assignor to AB Bahco Ventilation, Enkoping, Sweden

Filed Mar. 14, 1973, Ser. No. 341,282

Int. Cl. F28d *15/00*

U.S. Cl. 62—3 **8 Claims**



This disclosure related to apparatus for transferring heat between two media located on opposite sides of a partition wall constructed of heat insulating material. A plurality of heat delivering heat pipes extend in spaced relation into one side of the wall and terminate in end portions having at least three equally extensive peripheral planar surfaces defining an equilateral transverse cross-section. A plurality of heat absorbing heat pipes extend in space relation into the other side of the wall and terminate in end portions of the same configuration as the end portions of the heat delivering heat pipes. The heat pipes are grouped and arranged with their respective end portions disposed in spaced overlapping relation and at least one of the end portions has at least three of its planar surfaces in spaced overlapping relation with the respective planar surfaces of at least three oppositely extending heat pipes. Thermoelectric means, having a cold end and a hot end when energized, are disposed between the spaced overlapping planar surfaces and in heat conducting connection therewith whereby heat may be transferred from the heat delivering heat pipes to the heat absorbing heat pipes. The end portions of the heat pipes have transverse cross-sections defining an equilateral triangle, a square, or a regular polygon.

3,834,172

DOUBLE-ACTING EXPANDER ENGINE AND CRYOSTAT

Axel G. Dehne, 6551 W. 83rd St., Los Angeles, Calif. 90045

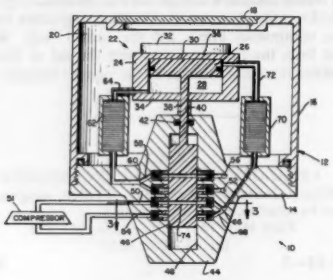
Division of Ser. No. 310,301, Nov. 29, 1972, Pat. No. 3,788,088. This application Nov. 1, 1973, Ser. No. 411,968

Int. Cl. F25b *9/00*

U.S. Cl. 62—6 **8 Claims**

Double-acting expander engine minimizes shuttle losses by having a cylinder at low temperature along its entire length,

minimizes pumping losses by requiring only a thin piston, and minimizes conduction losses by providing a thin piston rod.

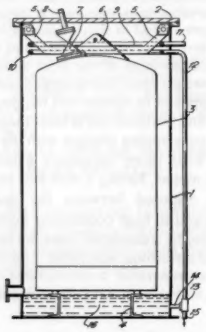


Refrigeration capacity is approximately doubled by the double-acting configuration.

3,834,173
ROTARY KILNS

George Marshall Gillies, St. Annes, and James Edgar Littlechild, Lytham, both of England, assignors to United Kingdom Atomic Energy Authority, London, England

Division of Ser. No. 132,649, April 9, 1970. This application June 1, 1972, Ser. No. 258,803
Claims priority, application Great Britain, Apr. 23, 1970, 19664/70; May 11, 1970, 22749/70
Int. Cl. B60h *1/00*
U.S. Cl. 62—46 **4 Claims**

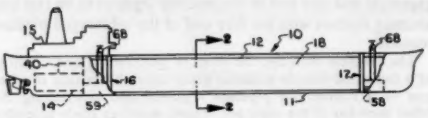


Apparatus for the conversion of a solid material to a gaseous phase by sublimation in which the rate of vaporisation of the solid material is controlled in accordance with the pressure of the gas formed by the conversion. The apparatus finds particular application in the continuous, automatically controlled sublimation of uranium hexafluoride prior to its conversion to uranium dioxide in a gas phase reaction with steam and hydrogen.

3,834,174
CRYOGENIC TRANSPORTATION METHOD AND APPARATUS THEREFOR

William P. Strumbos, 85 Middleville Rd., Northport, N.Y. 11768

Continuation of Ser. No. 829,207, June 2, 1969, abandoned. This application Feb. 2, 1972, Ser. No. 222,814
Int. Cl. F17c *3/10*
U.S. Cl. 62—47 **16 Claims**

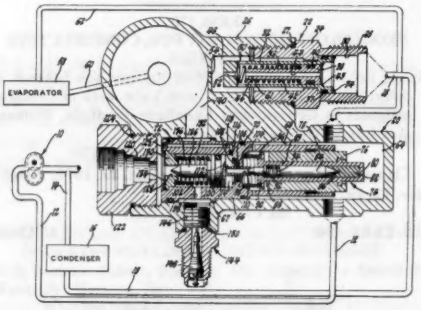


A marine transportation system in which natural gas, oil, and other suitable liquid and liquid and dry bulk cargoes are solidified by freezing so as to permit such cargoes to be shipped by sea safely and efficiently in light-weight, inexpensive carriers. The invention further relates to a sea-going carrier suitable for use in the method wherein the frozen cargo itself provides the necessary structural strength to accommodate the static and dynamic loads imposed on the carrier during the transportation of such bulk materials. A method and means are also provided for freezing large masses of matter efficiently so as to make the transportation method of this invention commercially advantageous. Advantage is also taken of the change of density of substances due to a change of their temperature to regulate the refrigerating means utilized to thereby control the resulting buoyancy of those substances during their transportation by sea.

3,834,175
SERVO TEMPERATURE CONTROL VALVE FOR REFRIGERATION SYSTEM

Dana C. Jones, Orlando; Cleo E. Cook, Melrose, both of Fla., and Alfred K. Murray, Dover, N.J., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 31, 1973, Ser. No. 393,424
Int. Cl. F25b *41/00*
U.S. Cl. 62—196 **3 Claims**



A vapor compression type air conditioning system including a defrost control servo valve between the compressor and the evaporator and in bypass relationship to a condenser and expansion valve which directs a metered quantity of warm refrigerant directly to the evaporator to maintain an evaporator temperature above 32° F. A thermostatic element responsive to evaporator refrigerant temperature moves a pilot needle valve which controls the pressure in a variable volume control chamber formed on one end of a piston. A main nee-

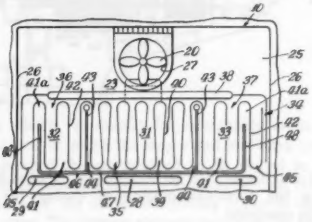
dle valve extending from the other end of the piston is moved with the piston in response to pressure changes in the control chamber to a location corresponding to the position of the pilot needle valve. The main needle valve coacts with a bypass opening to regulate the quantity of warm refrigerant introduced to the evaporator.

3,834,176

REFRIGERATOR EVAPORATOR CONSTRUCTION

Clarence C. Clarke, Evansville, Ind., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Oct. 9, 1973, Ser. No. 404,190
Int. Cl. F25d *21/06*
U.S. Cl. 62—276 **17 Claims**



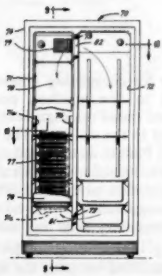
A refrigerator evaporator construction arranged to provide extended operation between defrosting requirements. The evaporator is defined by different portions having different width passes and the air flow from different portions of the refrigerator is correlated with the width of the passes to provide minimum blocking of the passes by frost buildup. The evaporator defines vertically extending passes and a defrost heater is provided extending upwardly into selected passes providing for facilitated installation and removal. The evaporator enclosure is arranged to define means for bypassing air around a lower end portion of the evaporator in the event of blockage thereof by frost buildup.

3,834,177

REFRIGERATOR CABINET STRUCTURE AND ITS MANUFACTURE

John A. Scarlett, Richmond, Ind., assignor to Philco-Ford Corporation, Blue Bell, Pa.

Filed Dec. 7, 1972, Ser. No. 311,722
Int. Cl. F25d *21/14*
U.S. Cl. 62—288 **2 Claims**



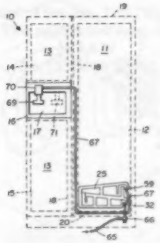
In the manufacture of refrigerator cabinets of the dual compartment type, using vacuum forming techniques to mold an integrally formed double cavity liner, desired communicating fluid passages are formed between compartments, through confronting liner walls of adjacent compartment sections. While the liners are still in a pliable state, small sections of confronting liner walls at locations where passages are desired, are moved, with relation to one another, toward and into abutting engagement. The liners are then allowed to cool, followed by piercing the engaged liner wall sections to form the desired communicating passages.

3,834,178

CONTAINER FOR SUPPLYING CHILLED WATER FROM A REFRIGERATOR OR THE LIKE

John J. Pink, Cedar Rapids, Iowa, assignor to Amana Refrigeration, Inc., Amana, Iowa

Filed Oct. 1, 1973, Ser. No. 402,126
Int. Cl. F25d *23/12*
U.S. Cl. 62—338 **8 Claims**



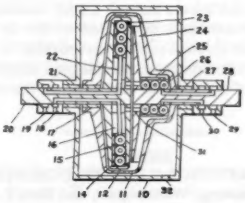
An unpressurized container for dispensing chilled water from a freezer-refrigerator or the like is connected into a water supply line through a valve upstream of the container. The container itself consists of a pair of elongated tanks disposed one above the other and constructed so as to impede mixing of warm water entering the lower tank with chilled water in both tanks as the chilled water is drawn off through an outlet from the upper tank.

3,834,179

TURBINE WITH HEATING AND COOLING

Michael Eskeli, 6220 Orchid Ln., Dallas, Tex. 75230

Continuation-in-part of Ser. No. 405,628, Oct. 11, 1973. This application Oct. 23, 1973, Ser. No. 408,381
Int. Cl. F25b *3/00*
U.S. Cl. 62—401 **5 Claims**



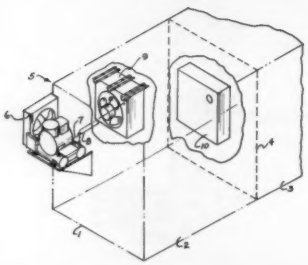
A method and apparatus for generating power by passing a fluid from higher energy level to a lower energy level by compressing said fluid within a centrifuge type first rotor, and discharging said fluid via nozzles near the periphery of said first rotor in a forward direction to a second rotor which is an inward flow type reaction turbine; and then passing said fluid near the center of said rotors back to said first rotor. Heat is being added to said fluid within said first rotor, and heat is being removed from said fluid within said second rotor. Said heat addition is from a heating fluid being circulated within a

heat exchanger in said first rotor, and cooling is by a cooling fluid circulated within a heat exchanger in said second rotor. Said first fluid being circulated within said rotors is sealed therein, and is usually gaseous. Said heating and cooling fluids are from external sources and may be either liquids or gases.

3,834,180
HEAT EXCHANGE UNIT

Horace Edgar French, III, Montgomery, Ala., and Harold F. Smith, Garland, Tex., assignors to UMC Industries, Inc., New York, N.Y.

Filed Dec. 29, 1972, Ser. No. 319,213
Int. Cl. F25d *17/04*
U.S. Cl. 62—417 **13 Claims**



In a heat exchanging system wherein a first compartment is disposed for reception of refrigerated air from a refrigerating and condensing unit, a heat exchanging means is provided in communication with the refrigerated air in said first compartment and is arranged for reception of the air from a second compartment, whereby a first circulating member forces the refrigerated air through said heat exchanger to provide for indirect conductive chilling of the air from the second compartment also circulating through said exchanger. The refrigerated air in the first compartment may be maintained at a temperature in the vicinity of 0°F., and through its forced circulation through the heat exchanger provides for chilling of the air in the other compartment to a cooled temperature in the vicinity of 32°F.

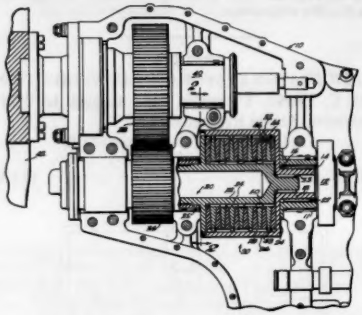
The process of performing this heat exchanging operation includes the steps of first refrigerating the air in said first compartment down to the temperature desired to provide supercooling of food or other products, while a quantity of said air is circulated by fan means through a heat exchanging means and with the concomitant circulation of the air in another compartment also through said means provides for an indirect chilling of the atmosphere in said second compartment to allow chilling of other food products, or the like, stored therein.

3,834,181
AIRCRAFT ENGINE FLEXIBLE COUPLING

Richard N. Strasburg, Williamsport, and Ezra F. Critchlow, Addison, both of Pa., assignors to Avco Corporation, Williamsport, Pa.

Continuation-in-part of Ser. No. 264,771, June 21, 1972, abandoned. This application Oct. 26, 1973, Ser. No. 410,033
Int. Cl. F16d *3/00*
U.S. Cl. 64—1 V **11 Claims**

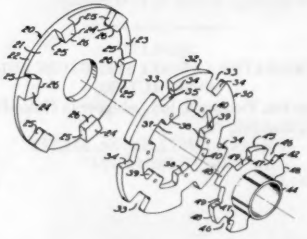
An aircraft engine of the reciprocating type has a flexible coupling interposed in the drive train between the engine crankshaft and a propeller. The flexible coupling includes an elastomeric material having a predetermined stiffness or spring rate. This stiffness is selected so that the resonant frequency of the major order for the combined propeller flexible-coupling crankshaft system is at an R.P.M. above idle but substantially below the engine's cruise R.P.M. The elastomeric compound has an internal damping factor of at least 0.2 to minimize the torsional oscillations during the resonant frequency condition.



3,834,182
FLOATING RING COUPLER

Walter H. Trask, Pasco, and Jack Dixon, Kennewick, both of Wash., assignors to Riggers Manufacturing Company, Kennewick, Wash.

Filed Jan. 22, 1973, Ser. No. 325,954
Int. Cl. F16d *3/18*
U.S. Cl. 64—9 R **3 Claims**



A flexible coupler for connecting nominally coaxial shafts drivingly connected to one another, permitting a limited amount of angular and radial misalignment between the shafts to be accommodated in the coupler. The coupler comprises three basic elements. First in an enlarged cylindrical hub fixed to one shaft. Second is a smaller cylindrical flange fixed to the other shaft in juxtaposition to the hub. Third is a "floating" annular ring also juxtaposed with the hub about the flange. Loose fitting complementary axial lugs and notches interconnect the hub and ring. Loose fitting complementary radial lugs and notches are interfitted between the ring and flange. the flange and ring are located relative to the hub for axial clearance, permitting limited angular misalignment between the two shafts. The flange and circumjacent coupler ring form a planar surface juxtaposed with the inner planar surface of the hub to form a longitudinally compact and rugged flexible drive coupler.

3,834,183

DRIVE CLUTCH

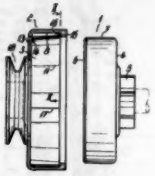
Erich Muller, Beutelsbach, Germany, assignor to Andreas Stihl Maschinenfabrik, Badstrasse, Neustadt, Germany

Filed Jan. 10, 1973, Ser. No. 322,433

Claims priority, application Germany, Jan. 12, 1972, 2201297

Int. Cl. F16d *3/52*

U.S. Cl. 64—15 R **20 Claims**



A drive clutch, especially for detachably connecting a motor to a tool, in which the motor and tool have respective drums connected thereto adapted to be placed in coaxial, coextensive, telescopic relation. A friction element in the radial space between the drums frictionally connects the drums with each other. The friction element may be in the form of an undulating spring carried by one of the drums and engageable with the other.

3,834,184

CENTRIFUGAL INJECTION TIMING CONTROL DEVICE FOR FUEL INJECTION PUMPS IN DIESEL ENGINES

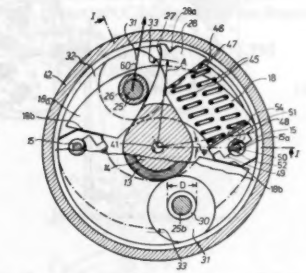
Eberhard Hofmann, Kirchberg, Murr, and Hartmut Lehmann, Ditzingen, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed July 3, 1973, Ser. No. 376,186

Claims priority, application Germany, July 27, 1972, 2236832

Int. Cl. F16d *5/00*

U.S. Cl. 64—25 **3 Claims**



A centrifugal injection timing control device for use with a fuel injection pump having a camshaft, in a diesel engine, is described which device comprises at least one flyweight which swivels against the force of at least one compressible return spring and which changes, by its swivelling movements and in dependence on the rpm of the engine, the mutual rotary position of two coaxially arranged shafts, one of which is the camshaft and serves as the driven shaft, the other shaft being the driving shaft, and which flyweight is supported on a bolt being connected to the driving shaft paraxially with the latter; first abutment means for said return spring, associated with the driven shaft, and second abutment means for the return spring, being supported articulatedly on a stub of the bolt, which stub protrudes in the axial direction from the flyweight on the bolt; and wherein the rpm-dependent characteristic of the relative rotary positions of the two shafts expressed by an adjustment angle ϕ is controllable from a cam track provided on a lever-shaped motion-transmitting member being rigidly connected to the camshaft for movement with the latter, and which device is improved by the provision, as the second abutment means, of a bracket having on its side facing away from the return spring a recess having a bearing face of U-shaped cross section, and means for securing the bracket on the stub against displacement in the axial direction.

3,834,185

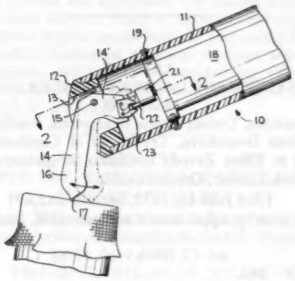
APPARATUS AND METHOD FOR MENDING KNIT FABRIC

Lonnie R. Davenport, 410 Hopkinsville St., Princeton, Ky. 42240

Continuation-in-part of Ser. No. 169,702, Aug. 6, 1971, Pat. No. 3,759,068. This application Aug. 20, 1973, Ser. No. 389,439

Int. Cl. D04b *35/00*

U.S. Cl. 66—1 R **16 Claims**



An apparatus and method for mending snags and pulls in knit fabrics, particularly knit fabrics used in apparel such as double knit fabric and light weight fabric with a lock stitch such as "no run" hosiery. The apparatus comprises a reciprocative blade member whose tip traces an arc of relatively large curvature, i.e., a substantially or near linear path. The blade is driven from an electric motor through a pin-slot drive mechanism. The method includes the step of applying the reciprocating blade tip to a piece of snagged fabric that is stretched over a mending cup such that the path traced by the blade tip corresponds to the "pull thread line" formed by the distorted knit stitches until the yarn loop is drawn back into the fabric and the distorted stitches resume their original shape.

3,834,186

KNIT CONTOUR UNIT FOR A KNITTING MACHINE

Howard D. Rogers, Westfield, and Henry Schaeflern, Pittstown, both of N.J., assignors to The Singer Company, New York, N.Y.

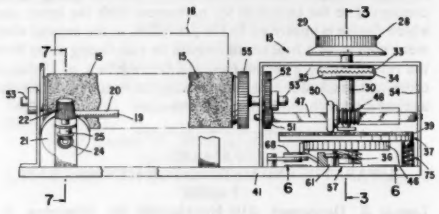
Filed Nov. 9, 1973, Ser. No. 414,557

Int. Cl. D04b *35/00, 37/00*

U.S. Cl. 66—1 R **8 Claims**

A knit contour unit for a knitting machine in which an input member, drivable by reciprocation of the carriage of the machine, is operatively connected to pattern advancing means through engagement with a drive plate which imparts movement to an input member. The extent of the incremental movement transmitted by the output member to the pattern advancing means is controlled by the selective positioning of

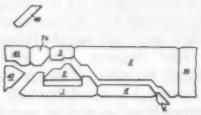
the output member on the drive plate. A dial selector is rotatably and depressably mounted in the frame of the unit and automatically effectuates disengagement of the drive plate from the output member when repositioning of the output member is to be effected.



3,834,187
CAM SYSTEM FOR DOUBLE CYLINDER KNITTING MACHINE

Pavel Zahradka, Trebic; Libuse Bozejovska, Predin u Trebice, and Alena Dvorakova, Trebic, all of Czechoslovakia, assignors to Elitex Zavody textilniho Strojirenstvi generalni reditelstvi, Liberec, Czechoslovakia

Filed June 16, 1972, Ser. No. 263,691
Claims priority, application Czechoslovakia, June 18, 1971, 4512-71
Int. Cl. D04b *9/10, 15/68*
U.S. Cl. 66—14 **4 Claims**



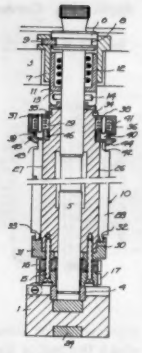
A two cylinder multifeed knitting machine having a cam system for controlling swingagle selectors and their associated needle jacks and needles; the machine is provided with a patterning device adapted to act upon the selectors and thus select needles for transfer into operative position.

3,834,188
SPRING LOADED PATTERN DRUM FOR EASE OF PATTERN JACK INSERTION

Jorge Rectoret Comas, calle Santalo, 96, Barcelona, Spain

Filed June 5, 1972, Ser. No. 259,387
Claims priority, application Spain, June 8, 1971, 392470
Int. Cl. D04b *15/74*
U.S. Cl. 66—50 B **2 Claims**

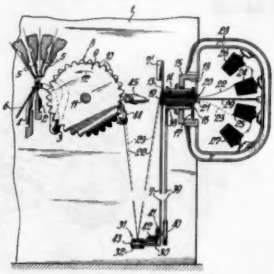
A pattern drum for a knitting machine has two overhanging rings or flanges to retain the pattern drum jacks against the drum, one of the rings or flanges being axially movable to allow fitting of the pattern drum jacks. The movable ring may be resiliently urged into to the pattern drum jack retaining position.



3,834,189
WARP KNITTING MACHINE

Heinz Kamp, Rickelrath; Willi Wilms, and Volker Reichardt, both of Monchengladbach, all of Germany, assignors to W. Schlafhorst & Co., Monchengladbach, Germany

Filed Mar. 16, 1973, Ser. No. 342,043
Claims priority, application Germany, Mar. 17, 1972, 2212935; Sept. 14, 1972, 2245115
Int. Cl. D04b *23/06*
U.S. Cl. 66—84 A **14 Claims**



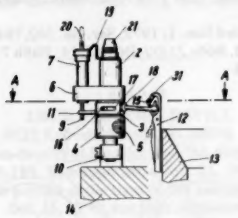
A warp knitting machine, particularly of the Raschel type, is provided with a device for inserting a weft thread into the knitted loops wherein a crank-shaped thread laying device is provided with a thread guide which is operable to undo the twist which occurs during the revolving movement of the thread laying device, thereby making it possible to draw, for example, two weft threads, which may be of different color or composition, simultaneously from the weft thread supply reels. A weft thread storer is provided which consists preferably of two storage discs facing each other and which is movable in the direction toward the knitting needles. The warp knitting machines can produce knitted goods whose appearance and properties correspond to those of woven goods, but where the knitted product can be manufactured at substantially higher production speeds than the woven product.

3,834,190

LATCH OPENER APPARATUS FOR KNITTING MACHINES AND PARTICULARLY CIRCULAR KNITTING MACHINES

Falk Kuhn, Kiebingen, Germany, assignor to Fouquet-Werk Frauz & Planck, Rottenburg am Neckar, Germany

Filed June 13, 1972, Ser. No. 262,380
Claims priority, application Germany, June 18, 1971, 2130143
Int. Cl. D04b *15/08, 35/10*
U.S. Cl. 66—111 7 Claims



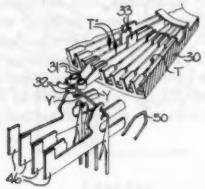
A tubular housing retains a spirally wound torsion spring, which is locked in one position and bears against a rotatable carrier which carries the latch opener itself in the form of a hook having a first bend, the inside corner of which may be formed as a cutting edge; and a second bend at an obtuse angle engaging the latches of the needle. If a needle latch should not open, or the needle be bent, the latch opener swings against the force of the torsion spring, thus tripping a shut-off switch to stop the machine, and simultaneously giving an indication by an indicator lamp which latch opener has tripped.

3,834,191

FABRIC SLITTING METHOD AND APPARATUS FOR CIRCULAR KNITTING MACHINE

Oscar Fregeolle, Hickory, N.C., assignor to Pilot Research Corporation, Valdese, N.C.

Filed June 12, 1969, Ser. No. 832,795
Int. Cl. D04b *33/00*
U.S. Cl. 66—147 10 Claims



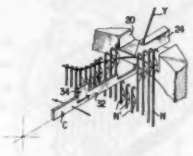
Selected transfer bits or jacks pick up and hold the yarn at each knitting station while it is knit on needles positioned adjacent sides of the held loops. The loops held on the transfer jacks then move into engagement with a cutting device to sever the yarn and thereby slit the fabric in a walewise direction as it is being knit on a circular knitting machine. The cutting device is disclosed as either a heated wire or a mechanical cutter.

3,834,192

METHOD AND APPARATUS FOR SLITTING FABRIC ON A CIRCULAR KNITTING MACHINE

Benjamin Giraud, Valdese, N.C., assignor to Pilot Research Corporation, Valdese, N.C.

Filed Feb. 28, 1969, Ser. No. 803,209
Int. Cl. D04b *35/00*
U.S. Cl. 66—147 11 Claims



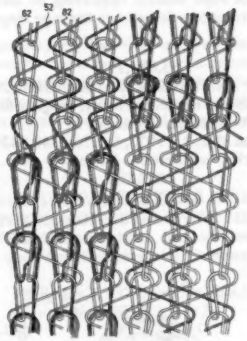
Seamless tubular fabric is slit in a walewise direction as it is being knit on a circular hosiery knitting machine by means of the present method and apparatus. The slitting apparatus includes a hooked element which is moved outwardly beyond the needle circle to pick up and hold the yarn as it is fed to and knit on needles positioned adjacent opposite sides of the hooked element, and means is provided for subsequently severing the yarn held in the hooked element to thereby form a slit in the fabric as it is knit.

3,834,193

PROCESS FOR THE PRODUCTION OF MULTI-COLORED SINGLE FACE WARE

Christian Peter Wilkens, Obertshausen, Germany, assignor to Karl Mayer Textilmaschindnfabrik GmbH, Obertshausen, Germany

Filed Apr. 2, 1973, Ser. No. 347,255
Int. Cl. D04b *21/00*
U.S. Cl. 66—195 5 Claims



A method for the production of a multi-colored type of single face ware utilizing a Raschel type warp knitting machine fitted with a jacquard attachment. Thread utilization by the guidelines is equalized by causing certain jacquard guide bars, namely these laying the threads on the technical back of the ware, to perform a lap additional to that performed by the remaining jacquard bars corresponding in thread utilization to the thread utilization of the guide bar laying the ground structure of the ware in the same course.

3,834,194

APPARATUS AND FLUID TREATMENT FABRIC IN ROPE FORM

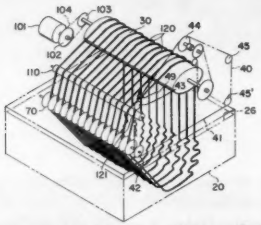
E. Stanway, Prestbury, near Macclesfield, England, assignor to United Merchants and Manufacturers, Inc., New York, N.Y.

Filed Oct. 4, 1972, Ser. No. 294,914

Claims priority, application Great Britain, Mar. 24, 1972, 13962/72

Int. Cl. B05c *3/132*; **G11b** *15/28*; **B65h** *75/02*

U.S. Cl. 68—176 **9 Claims**



Apparatus and method for passing a continuous length of textile fabric rope in a spiral path through a liquid treatment bath. One end of the rope is engaged and repeatedly wound by a conveyer mechanism about a scroll member and a winch roller. The invention particularly relates to a control system which senses the winch speed and independently actuates both the conveyer and the scroll by emitting a separate control signal for each, thereby permitting the scroll to be rotated to a larger number of revolutions than the conveyer mechanism when a wider spacing of rope convolutions is desired. Furthermore, the application enables a method of operation whereby the relative linear speed of the engaged rope end may be maintained at less than the peripheral speed of the winch roller surface but greater than one-third said peripheral speed. By a further aspect of the invention, the scroll member which guides the rope in spiral convolutions is structured to provide on one side thereof guide recesses which extend perpendicularly to the axis of the scroll thereby enabling greater lateral expansion of the rope without requireing an increase in the size of the apparatus or a decrease in the rope length.

3,834,195

HASP AND PADLOCK ARRANGEMENT

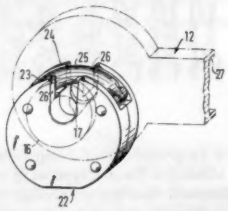
Wolfgang Winkhaus, Telgte, Germany, assignor to Aug. Winkhaus, Telgte/Westphalia, Germany

Filed Mar. 13, 1973, Ser. No. 340,842

Claims priority, application Germany, Mar. 22, 1972, 2213967

Int. Cl. E05b *65/48*

U.S. Cl. 70—8 **8 Claims**



A fastening arrangement of the hasp-and-padlock type is provided with a padlock carrier which is a pin having an axis and carrying a radial flange at its axial end remote from the associated mounting plate. The flange passes through the aperture in the hasp strap, and the shackle of the padlock fits axially between the strap and the flange with very little clearance, thereby protecting the pin. The shackle is protected against a cutting tool or saw by the flange. The dimensions of the flange and strap are selected so that the closed shackle is substantially completely received within the enveloping surface defined by straight lines connecting respective exposed edge portions of the flange and the hasp.

3,834,196

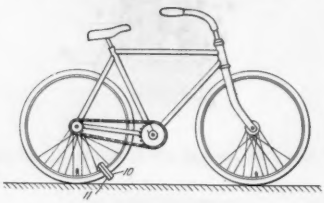
BICYCLE LOCK

Richard W. Stone, 7235 17th Ave., South, Minneapolis, Minn. 55423

Filed Nov. 1, 1972, Ser. No. 302,754

Int. Cl. B60r *25/00*; **B62h** *5/14*; **E05b** *71/00*

U.S. Cl. 70—18 **5 Claims**



This is a bicycle lock specifically designed to be locked around the wheel of a bicycle to prevent rotation thereof and having sufficiently large cross sectional dimensions to prevent any portion thereof from being received between the jaws of a lever action cutter tool.

3,834,197

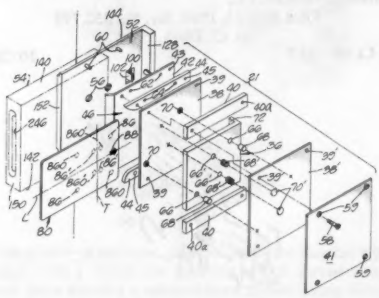
HIGH SECURITY, CARD OPERABLE MAGNETIC LOCK

Bruce S. Sedley, Larkspur, Calif., assignor to Greer Hydraulics, Inc., Los Angeles, Calif.

Filed Sept. 21, 1972, Ser. No. 290,861

Int. Cl. E05b *47/00*

U.S. Cl. 70—38 C **20 Claims**



Card operable magnetic lock having tumbler-carrying core sandwiched between two lock plates. The lock plates have locking openings therein adapted to receive the ends of the tumbler magnets carried by the core to prevent relative sliding movement between the core and the lock plates. The pattern of locking openings in the lock plates are complementary in that each locking opening in each lock plate is in alignment with a solid structure or "non-opening" in the other lock plate. A magnetic sheet attracts the tumbler magnets toward one of the locking plates to seat at least one of the magnets in the locking opening in that locking plate, and a card slot

disposed between the magnetic sheet and the locking plate is adapted to receive a coded magnetic card having magnetized spots thereon for attracting and/or repelling the tumbler magnets out of the locking openings in the locking plates to permit relative sliding movement between the core and the plates.

In one alternative embodiment the locking plates are removable. In another alternative embodiment such locking plate is provided with a full matrix of locking openings and shields having complementary patterns of holes are provided for coding the lock.

The lock is particularly suited for use in conjunction with door striker release mechanisms, padlocks and other devices which preclude the lock from being mounted in a horizontal position.

3,834,198

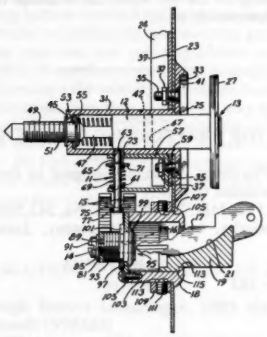
LOCK ANTI-PICK DEVICE

Max Wiczer, 9122 Kedvale, Skokie, Ill. 60076

Continuation-in-part of Ser. No. 294,385, Oct. 2, 1972, Pat. No. 3,765,199. This application Feb. 21, 1973, Ser. No. 334,394The portion of the term of this patent subsequent to Oct. 16, 1990, has been disclaimed.

Int. Cl. E05b *13/08, 5/04*

U.S. Cl. 70—208 **8 Claims**



An anti-pick device for a lock is described which includes means for disabling the lock, and means including a key slot for operating the disabling means. A housing is mounted over the key slot entrance and a key holder is mounted slidably in the housing for movement along the path aligned with the key slot. A recess is provided in the key holder extending transversely of the path of movement of the key holder for receiving the key and supporting the key in alignment with the key slot.

3,834,199

METHOD AND MACHINE FOR CORRUGATING OR PLEATING SHEET METAL

Georges Aimable Theophile Rouyer, Paris, and Maurice Henri Louis Fremont, Calmart, both of France, assignors to Societe National Industrielle Aerospatiale, Paris, France

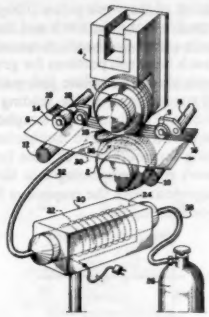
Filed Feb. 13, 1973, Ser. No. 332,142

Claims priority, application France, Feb. 16, 1972, 72.5138

Int. Cl. B21b *9/00*

U.S. Cl. 72—38 **6 Claims**

In order to corrugate or pleat between forming rolls sheet metal irrespective of its ductility while containing the blister formed at the end of the corrugation or pleat in the course of formation, the sheet is heated locally, at a short distance upstream of the rolls, to a temperature capable of rendering the sheet ductile. The rolls are protected against harmful heating by the distance between the heating region and the forming rolls.



3,834,200

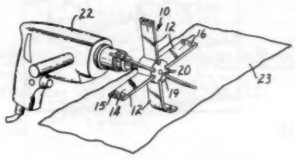
HIGH INTENSITY SHOT PEENING

Phillip M. Winter, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 244,510, April 17, 1972, abandoned. This application July 16, 1973, Ser. No. 379,249

Int. Cl. C21d *7/06*

U.S. Cl. 72—53 **17 Claims**



A high intensity peening flap construction comprising an elongate strap having at least one metal peening particle support base mechanically fastened adjacent one end thereof and a plurality of refractory hard, impact fracture resistant peening particles metallurgically joined to an exposed face of the support base.

3,834,201

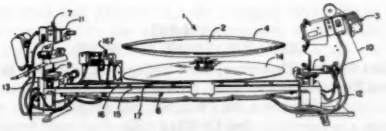
APPARATUS FOR FORMING A MARGINAL EDGE PORTION OF METAL WORK PIECES

Wayne E. Willard, Independence, Mo., assignor to Blue Valley Machine and Manufacturing and Company, Kansas City, Mo.

Filed May 7, 1973, Ser. No. 358,084

Int. Cl. B21d *19/12*

U.S. Cl. 72—70 **10 Claims**



An apparatus for forming a marginal edge portion of metal work pieces includes a trimming unit adapted to trim a mar-

ginal edge portion of a work piece to a shape in accord with the shape of a template. The work piece is rotatably mounted on a carriage movably along an elongated track between the trimming unit and a forming unit adapted to bend of form the marginal edge portion of the work piece. The carriage is substantially freely movable along the track and the trimming unit and the forming unit each have heads mounted to turn about vertical axes and each have roll portions for gripping marginal portions of the work piece. Template followers are arranged for each head and spaced from and in leading relation to the respective vertical axis of the head. The template followers are operatively connected through servo mechanism to respective head portion turning members whereby the heads are turned to maintain the work piece advancing into the gripping rolls for operative engagement with the respective head portion of the trimming unit or forming unit.

3,834,202

METAL STRIP STRAIGHTENING MACHINE

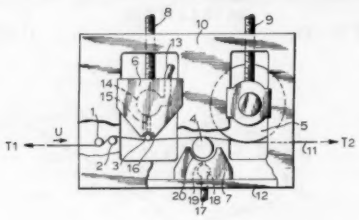
Kiyoshi Kawaguchi, Kudamatsu; Kaoru Shoge, Tokuyama, and Kenji Ono, Kudamatsu, all of Japan, assignors to Toyo Kohan Co., Ltd., Tokyo, Japan

Filed Sept. 12, 1973, Ser. No. 396,365

Claims priority, application Japan, Apr. 24, 1973, 48-45740

Int. Cl. B21d *1/02*

U.S. Cl. 72—163 **5 Claims**



The present invention relates to an apparatus for correcting warps such as gutter and curl in a metal strip. The apparatus comprises a small roll which is preceeded by rolls for correcting defects in the shape of the metal strip such as edge wave, full center and quarter buckle and said small roll is followed by at least one medium roll. The small and medium rolls are supported by a film of pressurized liquid and the rolls rotate freely in contact with the moving metal strip, which is bent under tension by said small and medium rolls. The gutter and curl defects are thus each completely eliminated independently of the other.

3,834,203

STRAIGHTENING MACHINE

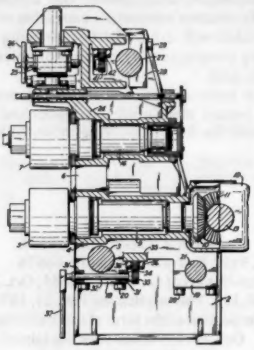
Elbert Gordon Thompson, State College, Pa., assignor to Sutton Engineering Company, Pittsburgh, Pa.

Filed Nov. 30, 1972, Ser. No. 310,974

Int. Cl. B21d *1/02*

U.S. Cl. 72—164 **3 Claims**

The ends of a horizontal bar are secured to the spaced end housings of a straightening machine. Mounted on the bar are housings for two vertically spaced rows of rolls, the housings in the lower row alternating with the housings in the upper



roll. During straightening, the housings for the upper rolls press upwardly on the bar while the housings for the lower rolls press downwardly on it.

3,834,204

MACHINE FOR WRAP FORMING METAL STRIP AS IT IS UNCOILED

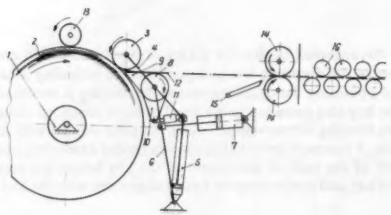
Josef Ihle, Pforzheim, Germany, assignor to Frau Irma Ungerer, Pforzheim, Germany

Filed Mar. 22, 1973, Ser. No. 343,788

Claims priority, application Germany, June 10, 1972, 2227398

Int. Cl. B21c *47/16*

U.S. Cl. 72—183 **17 Claims**



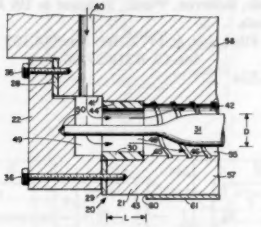
First controlled means are provided to impart a pivotal movement to a primary pivoted lever, to which a secondary pivoted lever is pivoted. Second controlled means are provided to impart to said secondary pivoted lever a pivoted movement relative to said primary pivoted lever. A processor roll is mounted on said secondary pivoted lever and engageable with the periphery of a coil of strip to be uncoiled. Said first and second controlled means are operable to hold said processor roll in engagement with the periphery of said coil as the latter decreases in diameter during the uncoiling of said strip.

3,834,205

SELECTIVELY INSULATED MILL ROLL

Gustav A. Maag, Crestview Hills, Ky., and John E. Callaham, Marbrough, Mo., assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Dec. 20, 1972, Ser. No. 316,809
Int. Cl. B21b 27/08
U.S. Cl. 72—201 2 Claims



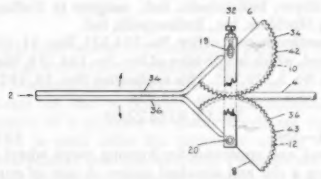
An improved mill roll having means for having flowable heat transfer medium circulated therethrough in close proximity to its working surface for effecting temperature control of the working surface in which roll selective insulation is provided to obviate overaffecting non-working portions of the mill roll. The improved mill roll may further comprise rods disposed within its medium-conducting passageways for the purpose of increasing the velocity of medium therethrough for any given rate of medium flow. Such rods may be configured to profile the velocity of medium through the passageways so that areas of the roll subjected to the highest head loads are contacted by the highest velocity medium and vice versa. The improvements reduce the distortion of mill rolls which would otherwise occur due to thermal gradients.

3,834,206

PORTABLE PRESS FOR REDUCING THE SIZE OF TUBING

Edmond Joseph Honore Lamontagne, 1003 Michigan Ave., Sarnia, Canada (N752B3)

Filed Apr. 6, 1973, Ser. No. 348,582
Int. Cl. B21d 41/04
U.S. Cl. 72—211 3 Claims



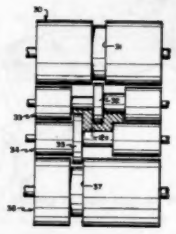
For reducing the size of a length of tubing, a portable press with two grooved members is provided. The members are arcuate and are mounted so that an opening, with a slightly greater cross sectional size than, but the same shape as, that to which the tubing is to be reduced is defined between the grooves. The members are movable so that the tubing can drawn longitudinally through the opening by friction between the tubing and the movable member, thereby reducing its size.

3,834,207

METHOD AND APPARATUS FOR FORMING AN ACCURATELY DIMENSIONED METAL STRIP HAVING VARYING THICKNESS

Roger E. Laigle, Torrington; Antone F. Rakich, Waterbury, both of Conn., and William J. Sivakoff, Buffalo, N.Y., assignors to Anaconda American Brass Company, Waterbury, Conn.

Filed Aug. 30, 1972, Ser. No. 285,015
Int. Cl. B21b 29/00, 1/08
U.S. Cl. 72—241 3 Claims



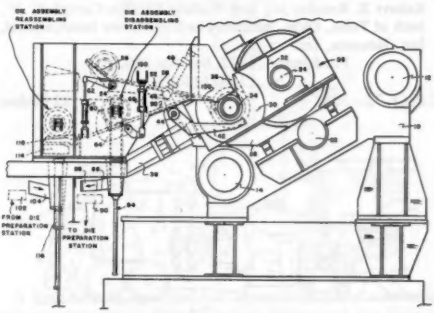
A method and apparatus for forming an accurately dimensioned metal strip having a plurality of thicknesses in which a feed strip is passed through a pair of work rolls, one or both of which has a raised portion for forming the desired shape during the reduction, wherein both work rolls are supported by back-up rolls which rotate in engagement with the work rolls with one or both of the back-up rolls having a notched recess to accommodate raised portions of the work roll.

3,834,208

DIE CHANGING APPARATUS

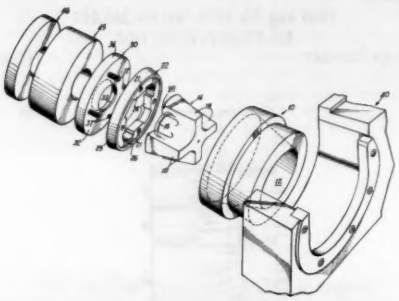
Herbert K. Schmidt, Springfield, Pa., assignor to Wean United, Inc., Pittsburgh, Pa.

Filed May 25, 1973, Ser. No. 364,172
Int. Cl. B21c 23/00
U.S. Cl. 72—263 11 Claims



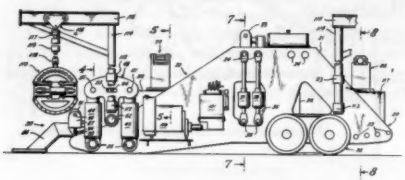
This disclosure pertains to a die changing device for an extrusion press. The die assembly comprises a die holder, a backing plate and the die, in which connection a new die assembly is installed in the press after each extrusion operation. The new assembly is installed in the press and used while the three components of a previous assembly are automatically separated from each other and the die transferred to a cleaning and cooling station, after which the three components are automatically reassembled and held in readiness to be installed in the press for the next extrusion operation.

3,834,209
EXTRUSION DIE
Harry M. Robertson, P.O. Box 291, Raymond, Ga. 30271
Filed Mar. 30, 1973, Ser. No. 346,352
Int. Cl. B21c 25/04
U.S. Cl. 72—269 15 Claims



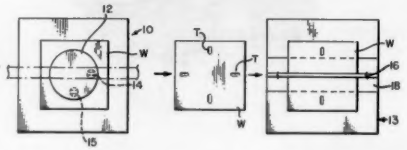
An extrusion die is disclosed for forming tubular extrusions from billets. The extrusion die comprises a die ring having an interior surface defining a bore. A spider is positioned within the die ring bore having a mandrel and a plurality of angularly spaced legs disposed against the die ring bore surface with the leg ends disposed in spaced relation with the mandrel. A sealing ring is positioned within the die ring bore in abutment with the spider leg ends and with the die ring bore surface, the sealing ring having a central aperture and a planar surface disposed transverse the bore axis. A die cap is provided having a planar surface disposed in abutment with the sealing ring planar surface and having an aperture extending through the die cap from a rim within the die cap planar surface, the rim being disposed in spaced relation about the mandrel. Means are also provided for holding the die cap and spider together with the sealing ring sandwitched therebetween.

3,834,210
PIPE BENDING SYSTEM
Edward A. Clavin; Lionel H. Wheeler, both of Houston, Tex.; Robert E. Brooks, Jr., and Wallace Clealon Campbell, Jr., both of Tulsa, Okla., assignors to CRC-Crose International, Inc., Houston, Tex.
Filed June 6, 1972, Ser. No. 260,275
Int. Cl. B21d 9/05
U.S. Cl. 72—308 22 Claims



An improved pipe bending system including a pipe bending machine and an internal pipe supporting mandrel. The pipe bending machine comprises a main frame having connected thereto directly or indirectly a bending die, a stiffback, and a stiffback clamp, a pin-up shoe and a pin-up clamp, an internal stiffback support, and an internal pin-up support. The internal pipe supporting mandrel includes an upper assembly having a plurality of elongated inflatable bags attached thereto, a lower assembly, and means connecting the upper and lower assembly for moving them apart and into engagement with the interior of the pipe. This abstract is neither intended to define the invention of the application which, of course, is measured by the claims, nor is it intended to be limiting as to the scope of the invention in any way.

3,834,211
A METHOD OF MANUFACTURING MULTIPLE PARTS FROM A WORKPIECE
Dennis Daniels, Bellevue, Wash., assignor to US Amada, Ltd., Seattle, Wash.
Filed Nov. 6, 1972, Ser. No. 304,102
Int. Cl. B21k 27/06
U.S. Cl. 72—324 7 Claims

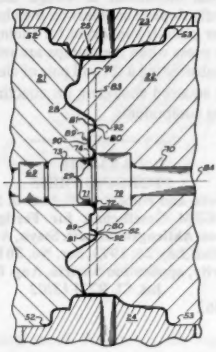


A workpiece from which multiple parts are to be separated is provided with tabs placed in the workpiece during numerically controlled punching operation. The tabs extend from the body of the workpiece and are provided with two cut edges parallel to each other and to lines of division for separating the part from the workpiece. Shearing of the part from the workpiece is accomplished by positioning the workpiece relative to the shearing knife by the use of the edges of the tabs. A die having parallel edges spaced apart the same distance as the edges of the tab is aligned with a shearing knife. A single tab placed in the die will position the workpiece along an axis and will restrict rotation of the workpiece. The tab will be removed when the part is sheared from the workpiece. The article is thus a flat piece of metal provided with a plurality of tabs positioned along lines of division of the parts to be separated from the workpiece with the long edges of the tabs overlying lines of division so that the tabs are separated from the article as parts are removed.

3,834,212
APPARATUS FOR FORMING METAL WHEELS
Ralph E. Roper, Indianapolis, Ind., assignor to Wallance Expanding Machines, Inc., Indianapolis, Ind.
Continuation-in-part of Ser. No. 314,121, Dec. 11, 1972, abandoned, which is a division of Ser. No. 144,155, May 17, 1971, Pat. No. 3,729,795. This application Dec. 19, 1973, Ser. No. 425,976
Int. Cl. B21d 22/00
U.S. Cl. 72—354 11 Claims

A method and apparatus for forming metal wheel assemblies having a rim and attached spider. A pair of outer dies complementary to the final radial form of the wheel rim are moved together to enclose an annular metal workpiece. A pair of opposed conical dies are then moved interiorly of the outer dies and annular workpiece. Each conical die has an annular stuffing ledge which contacts the edge of the workpiece. Force is then exerted against the workpiece edges so as to plastically regenerate the workpiece between the conical dies and outer dies; thus, providing thickening of the material in desired areas. A spider extending across the workpiece is axially loaded with the conical dies causing plastic deformation of the spider. A center rod mounted to and projecting from one of the conical dies is concentric with the conical dies and extends through the spider as the spider plastically deforms

therearound. A groove formed in one of the conical dies forms a seating ridge in the spider which is defined by a plane per-



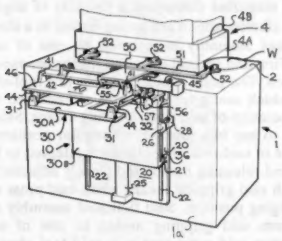
pendicular to the longitudinal axis of the wheel rim. A plurality of seating bosses are formed into the spider by the conical dies.

3,834,213

WORKPIECE TRANSLATION MECHANISM FOR TRANSFER DIE PRESS

William G. Henzler, Toledo, and Norman J. Gressman, Sylvania, both of Ohio, assignors to Hanzler Mfg. Corp., Toledo, Ohio

Filed Feb. 12, 1973, Ser. No. 331,788
Int. Cl. B21j *11/00*
U.S. Cl. 72—405 **1 Claim**



This invention relates to a workpiece translation mechanism for moving a workpiece through successive stations of a transfer stamping die. The necessary vertical and horizontal movements of the workpiece are accomplished by the cooperation of a plurality of plates which are respectively journalled to each other for reciprocal sliding vertical or horizontal relative motions. Hydraulic cylinders are employed which are operatively connected between the various plates and successively actuated to provide the desired horizontal and vertical motions of a workpiece carrier.

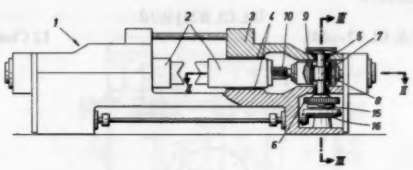
3,834,214

FORGING PRESS

Bruno Kralowetz, St. Ulrich 142, Steyr, Austria

Filed Apr. 25, 1973, Ser. No. 354,389
Claims priority, application Austria, June 9, 1972, 4975/72
Int. Cl. B21j *9/18*
U.S. Cl. 72—407 **2 Claims**

A forging press comprises two press rams slidably movable against each other in rigid slide tracks by a drive including, for each ram, two eccentric shafts coupled for rotation in opposite senses, an eccentric carried by each shaft, a respective slide block surrounding each eccentric, an elliptic chuck containing the two slide blocks, a rotatable screw and thrust rod member extending centrally through the chuck between the



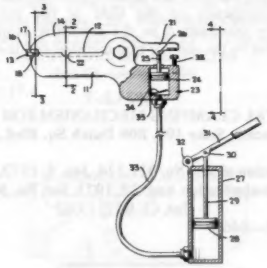
slide blocks and having at one end screw threads in threaded engagement with screw threads on the associated press ram, and being corotationally connected at its other end to an adjusting gearing. The rod member is axially displaceable relative to the gearing.

3,834,215

PORTABLE HYDRAULIC STRIP SEALER AND CUTTER

Luther H. Lemley, Lafayette, Ind., assignor to Willen Corporation, Rushville, Ind.

Filed Nov. 24, 1972, Ser. No. 309,166
Int. Cl. B21d *43/28*
U.S. Cl. 72—410 **10 Claims**

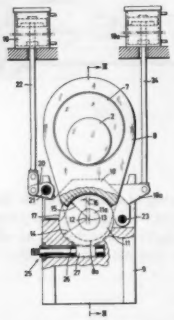


A hydraulically operated tool operable to cut a steel strip and also operable to crimp a seal on the strip. A top blade is pivotally mounted to a bottom block with the cutting edge of the blade received by a groove in the top surface of the block. A second groove extends across the block for receiving and holding the strip during cutting. The distal ends of the blade and block have mating flat surfaces which are forced together to crimp a seal on the strip. In one embodiment, a pair of hydraulic cylinders are mounted to the block and are operable by a pair of handles to close the blade with respect to the block. In another embodiment, one hydraulic cylinder is mounted to the block whereas the second hydraulic cylinder is separate from the blade and block but is connected to the first hydraulic cylinder by a high pressure conduit.

3,834,216
FORGING PRESS

Werner Schiller, Leverkusen; Peter Obladen, Schildgen, and Leonhard Peters, Duisburg, all of Germany, assignors to Eumuco Aktiengesellschaft fur Maschinebau, Leverkusen, Germany

Filed June 27, 1973, Ser. No. 374,221
Claims priority, application Germany, June 8, 1972, 2231579
Int. Cl. B21j *9/18*
U.S. Cl. 72—441 **12 Claims**

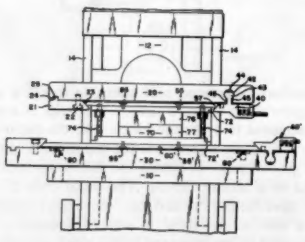


A pressure transmitting means is disposed between the pressure rod and the slide or ram member of a forging press. The pressure transmitting means has over its entire width in the lower zone thereof facing in a direction toward the slide member, a diameter different from another diameter in the upper zone which faces in a direction toward the pressure rod. The diameters are offset with respect to each other on one side of the transmitting means and are in contact with each other on the other side of the transmitting means. The pressure rod is connected to the pressure transmitting means which is a pin member in a specific embodiment so that forces acting eccentrically on the slide or rod member can be rectilinearly transmitted to the eccentric crankshaft of the forging press by the slide or ram member and the pressure rod.

3,834,217
PIVOTAL CLAMPING MECHANISM FOR DIE SETS

John S. Ducate, Suite 100, 800 Dutch Sq. Blvd., Verona, N.J. 29210

Continuation of Ser. No. 321,124, Jan. 5, 1973, abandoned. This application Aug. 20, 1973, Ser. No. 389,592
Int. Cl. B21j *13/02*
U.S. Cl. 72—446 **12 Claims**

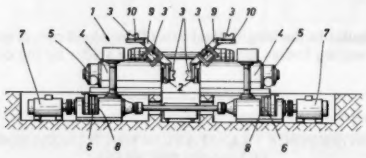


A quick change clamping mechanism for metal working presses having upper and lower bolsters for supporting die components therebetween. The mechanism includes a clamping plate for mounting die components, articulated clamps pivotally mounted near one edge of each bolster, and opposing stops mounted near the opposite edge thereof. Each articulated clamp is activated by a piston component which produces pivotal movement to wedge the clamping plate between inwardly sloped shoulders on the clamp and opposing stop. The lower plate is supported for sliding movement into and out of the press when the clamps are released. Modifications include substituting a second pair of clamps for the stops and providing squared shoulders on coacting portion of the upper clamping components.

3,834,218
FORGING PRESS

Bruno Kralowetz, and Hubert Grill, both of Steyr, Austria, assignors to GFM Gesellschaft fur Fertigungstechnik und Maschinenbau Aktiengesellschaft, Steyn, Austria

Filed July 23, 1973, Ser. No. 381,498
Claims priority, application Austria, Aug. 8, 1972, 6848/72
Int. Cl. B21j *13/02*
U.S. Cl. 72—462 **6 Claims**



The press comprises a forging box and at least one horizontal press ram having a free end. Gripping means are mounted on said free end and spring-biased in a closing sense. A first tool assembly comprising a tool frame and a tool is held by said gripping means on said free end of said press ram. A rotatable magazine comprises a plurality of angularly spaced retaining clamps, which are spring-biased in a closing sense. A second tool assembly is retained by one of said retaining clamps. First and second releasing means are mounted on said forging box. The press ram is movable to a tool-changing position, in which said gripping means are adapted to be opened by the operation of said first releasing means. Said magazine is rotatable to any of a plurality of angular positions, in each of which one of said retaining clamps is adapted to be opened by said second releasing means and closely adjacent to and in register with said gripping means when said press ram is in said tool-changing position. Said first tool assembly can be transferred from said gripping means to one of said retaining clamps when said press ram is in said tool-changing position and said magazine is in one of said angular positions. Said second tool assembly can subsequently be transferred from another of said retaining clamps to said gripping means when said magazine has been rotated to another of said angular positions and said press ram is in said tool-changing position.

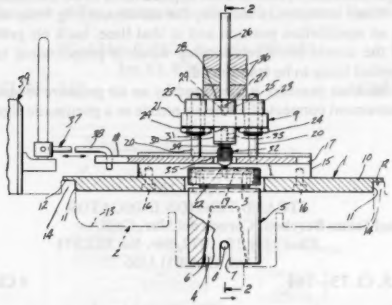
3,834,219
PROCESS AND APPARATUS FOR PREDICTING THE TOOL WEAR CHARACTERISTICS OF METAL SHEET

Dennis R. Brauer, Black Jack, Mo., assignor to Olin Corporation, New Haven, Conn.

Filed Aug. 22, 1972, Ser. No. 282,671
Int. Cl. G01n *3/56*
U.S. Cl. 73—7 **15 Claims**

A process and apparatus for predicting the tool wear characteristics of metal sheet. A test sample of metal sheet having a lubricated metal surface is contacted by a hardened steel ball under a given load. The test sample is rotated and the steel ball is reciprocated back and forth in a substantially linear direction across the test surface, preferably simultaneously for a given period of time. The degree of wear on the

metal ball after rotation of the sample and reciprocation of the ball have ceased is an indication of the tool wear characteristics of the metal sheet. Preferably, the degree of wear is determined by optical examination using a microscope to see if abrasion or polishing of the surface of the ball has occurred.



3,834,220

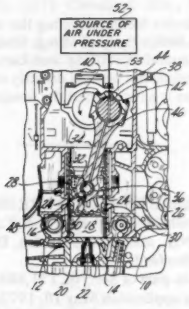
BUBBLE TEST FOR INTERNAL COMBUSTION ENGINES

Hollis O. Westmoreland, 12010 Arcola, Livonia, Mich. 48150

Filed Dec. 11, 1972, Ser. No. 313,853

Int. Cl. G01m *3/06*

U.S. Cl. 73—47 **5 Claims**



A procedure for locating piston and connecting rod defects in a piston operated, internal combustion engine such as a diesel engine. For two steps, the engine is supported upside down and diesel fuel or similar liquid disposed inside each piston being tested. The crankshaft is then turned over to compress the air in each combustion chamber. Air bubbling through the liquid in any piston indicates a defect, such as a sand hole, in the piston. To locate a blocked oil passage in the connecting rods, compressed air is passed through the oil gallery to form bubbles in the liquid contained in the pistons. The absence of bubbles in any piston indicates a blocked passage in the corresponding connecting rod or a blocked passage leading to the connecting rod.

In another form of the test, the engine is tested right side up. An opening is formed in the top of the combustion chamber by removing the fuel injector or fuel nozzle or plug, and the chamber is then filled with oil. By applying air pressure to the bottom of the piston, the user can detect a defective piston by observing bubbles passing up through the combustion chamber in the fuel injector opening.

3,834,221

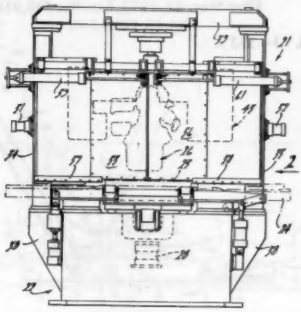
TEST STAND FOR VEHICLE ENGINES

Philip E. Swis, Mt. Clemens; Russell Labeau, Southfield, and Glenn M. Brown, Royal Oak, all of Mich., assignors to The Cross Company, Fraser, Mich.

Filed May 23, 1973, Ser. No. 363,054

Int. Cl. G01m *15/00*

U.S. Cl. 73—116 **25 Claims**



A cradle of inverted U shape is suspended from a frame and rockable on vertical and horizontal axes. With the cradle locked to the frame an engine to be tested is placed within the cradle and rigidly locked thereto at an exact predetermined location. The crankshaft is rotated by drive means so constructed as to add minimum dynamic unbalance to the engine. The cradle is unlocked from the frame and the dynamic unbalance of the engine is measured by seismic transducers engaging the engine or directly attached to the cradle.

3,834,222

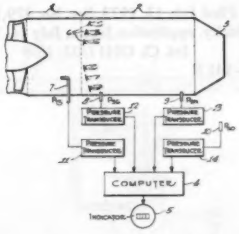
METHODS AND APPARATUS FOR DETERMINING THE THRUST OF A JET ENGINE

George B. McDonald, Bells Corner, Ontario, Canada, assignor to Control Data Canada, Ltd., Willowdale, Ontario, Canada

Division of Ser. No. 222,225, Jan. 31, 1972. This application Feb. 27, 1973, Ser. No. 336,165

Int. Cl. G01m *15/00*

U.S. Cl. 73—117.4 **12 Claims**



Apparatus is known for determining gross thrust in jet engines by measuring various internal pressures, including measurement of total pressure at the nozzle entrance by means of an immersed probe. The immersed probe has a very short life when an afterburner is used in the engine. The apparatus for the invention is able to determine total pressure at the nozzle entrance, without an immersed probe, from the total pressure in the diffuser and the static pressure at the nozzle entrance. Another embodiment makes use of an additional static pressure in the flame-holder region. Also, the invention is for

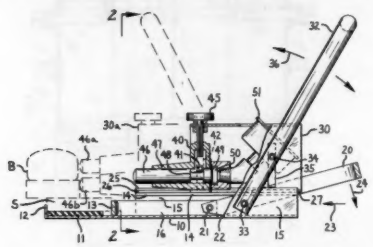
determining the gross thrust of an engine and it distinguishes between an engine with a nozzle operating in a choked condition and an unchoked condition.

3,834,223

DEVICE FOR MEASURING THE LATERIAL FORCES REQUIRED TO RELEASE A SKI BOOT FROM A SKI TOE CLAMP

Max Frey, 3940 S. W. Altadena Ave., Portland, Oreg. 97201

Filed Mar. 13, 1973, Ser. No. 340,918
Int. Cl. G011 *5/03*
U.S. Cl. 73—133 A **8 Claims**



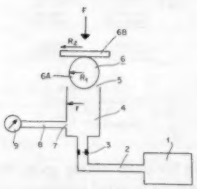
A base plate is adapted to underlie a ski having a ski boot secured thereon by a conventional type of releasable binding having a toe clamp and a heel clamp. The base plate has a ski clamp to hold the ski in a fixed position. A horizontal slide on the base member is movable by a hand lever laterally toward and away from the ski. A vertical slide on the horizontal slide carries a horizontal plunger having a projecting end arranged to be pressed against one side of the sole of the ski boot adjacent the toe clamp by manipulation of the hand lever which operates the horizontal slide. The opposite end of the plunger deflects a diaphragm to displace hydraulic fluid into a maximum reading pressure gauge which is calibrated to indicate the force necessary to release the toe of the boot laterally from its toe clamp.

3,834,224

DEVICE FOR TRANSDUCING FORCE INTO PNEUMATIC SIGNAL

Mitsuo Uchida, Ibaraki; Sigeru Jinno, Otsu; Yoshiki Suzuki, Amagasaki; Ryuya Itagaki, and Tooru Sumi, both of Otsu, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed July 13, 1973, Ser. No. 379,170
Claims priority, application Japan, July 14, 1972, 47-69976
Int. Cl. G011 *1/02, 1/08*
U.S. Cl. 73—141 R **4 Claims**



A device for transducing a force into a pneumatic signal comprises an air obstructing body composed of a rigid ball and supporting disc against which a force to be transduced is applied, and an air nozzle including an opening facing the rigid ball, the air nozzle being connected to a compressed air supply unit. Compressed air from the opening of the air nozzle flows away along the surface of the rigid ball. As a result the above, the air obstructing body moves upward or downward by the difference between a compressed air force acting upon the rigid ball compressed and the applied force to be transduced.

When both forces balance, the air obstructing body settles in an equilibrium position and at that time, back air pressure of the nozzle has a relationship which is proportional to the applied force to be transduced.

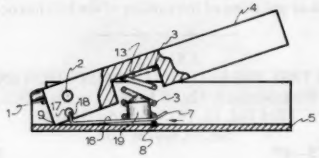
Back air pressure is measured by an air pressure measuring instrument connected to the air nozzle as a pneumatic signal.

3,834,225

STRAND TENSION INDICATOR

Paul James Burchett, Corona del Mar, Calif.

Filed May 15, 1972, Ser. No. 253,571
Int. Cl. G011 *5/06*
U.S. Cl. 73—144 **4 Claims**



A hand-held device for determining the tension in a flexible strand such as a tennis racquet string. One end of a pivoting device clamps around the string and bends it under spring pressure. The tension can be read directly on a scale, since the bending deflection is a function of the tension on the string.

3,834,226

DISPOSABLE TEMPERATURE INDICATOR

Saviour S. Pecorella, Howard Beach, N.Y., and Robert Shotkin, Milburn, N.J., assignors to Becton, Dickinson and Company, East Rutherford, N.J.

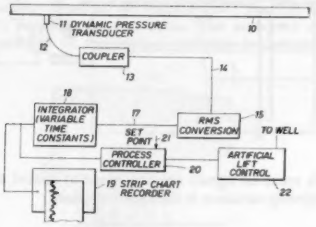
Continuation-in-part of Ser. No. 171,888, Aug. 16, 1971, abandoned. This application May 10, 1973, Ser. No. 359,196
Int. Cl. G01n *19/04*
U.S. Cl. 73—150 A **6 Claims**

An irreversible and disposable temperature-indicating device, such as but not restricted to one capable of being inserted into and of indicating the temperature of a living body. The device contains one or more heat-responsive materials preferably disposed as a film situated between and adhering to each of a pair of separable members, so arranged that each pair of separable members is capable of being pulled apart by a predetermined force at a predetermined temperature prior to melting of the material. The resulting separation is used directly or indirectly to provide indication that the predetermined temperature has been attained.

3,834,227
METHOD FOR DETERMINING LIQUID PRODUCTION FROM A WELL

Maurice M. Patterson, Houston, and Bass C. Sheffield, Bellaire, both of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed May 2, 1973, Ser. No. 356,650
Int. Cl. E21b 47/00
U.S. Cl. 73—155 4 Claims

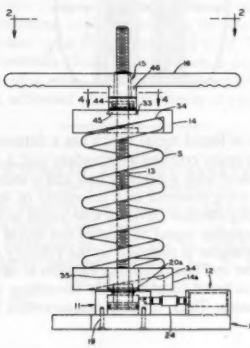


A method for determining the liquid flow in a pipe having either slug or two-phase flow wherein the dynamic pressure fluctuations are measured, and converted to a useful signal. The root mean square of the signal is obtained and integrated over a specific time interval to obtain the liquid flow in the pipe.

3,834,228
COIL SPRING TESTING DEVICE

Hilton J. Wachholz, 2171 Cleveland Ave., Columbus, Ohio 43221

Filed June 8, 1973, Ser. No. 368,268
Int. Cl. G01l 1/04
U.S. Cl. 73—161 9 Claims

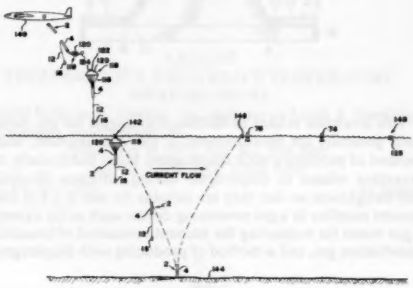


A device for testing heavy type coil spring consisting of a screw having upper and lower spring retainers mounted thereon for relative axial movement, the spring to be tested surrounding the screw axially between the retainers for compression. A hydraulic load cell and indicator unit is provided and the lower end of the screw is anchored to the piston thereof. The spring is compressed by a nut threaded on the upper end of the screw and the lower end of the spring rests on the cylinder of the cell, which exerts an upward pull on the piston to actuate the connected indicator to indicate the amount of pressure developed.

3,834,229
METHOD AND APPARATUS FOR MEASURING WATER CURRENTS

Henry J. White, Jr., 18 Pelican Isle, Fort Lauderdale, Fla. 33301

Filed Aug. 12, 1971, Ser. No. 171,147
Int. Cl. G01w 1/00
U.S. Cl. 73—170 A 25 Claims

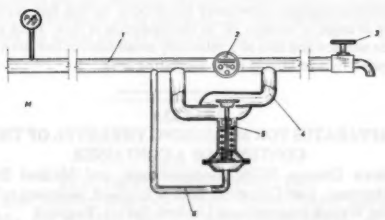


An instrument package containing three float markers is dropped into a body of water, a first one of the markers being designed to float on the surface. The second and third markers sink to a subsurface level and then are released with a predetermined time delay therebetween, whereupon they ascend to and float on the surface. The relative positions of all three float markers are then charted, and from such chart and the elapsed times both the water current velocity V_c at the surface and the average current velocity V from the subsurface level to the surface are calculated.

3,834,230
SYSTEM FOR THE PROPORTIONAL EVALUATION OF QUANTITATIVE FLOW OF FLUIDS

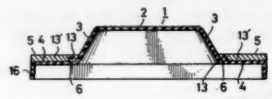
David Auerbach, 117 Derech Harhalom, Tel-Aviv, Israel

Filed Aug. 31, 1972, Ser. No. 285,887
Int. Cl. G01f 1/00
U.S. Cl. 73—199 11 Claims



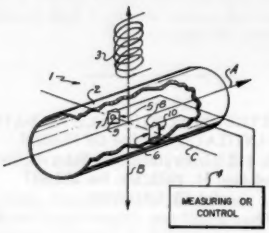
A system for the proportional evaluation of quantitative fluid flow through a supply line to a receiver, includes a meter in the supply line that is bypassed by a line having therein a regulator valve controlled by the pressure upstream of the meter and bypass. The meter is calibrated so that for each unit of actual flow through the supply line at any pressure it will continuously show proportional quantities according to the desired rate per unit fixed by the supplier.

3,834,231
FLEXIBLE DIAPHRAGMS FOR GAS METER
Hachiro Hisada, Tokyo, Japan, assignor to Tokyo Toyo Rubber Industry Co., Ltd., Tokyo, Japan
Filed Apr. 17, 1973, Ser. No. 351,842
Int. Cl. G01f 1/00
U.S. Cl. 73—279 **10 Claims**



This invention relates to flexible diaphragms for gas meters used generally for measurement of gas consumption, and a method of producing such diaphragms. More particularly, the invention relates to diaphragms having sufficient flexibility and airtightness so that they are suitable for use as a key component member in a gas measuring device such as for example a gas meter for measuring the amount consumed of household combustion gas, and a method of producing such diaphragms.

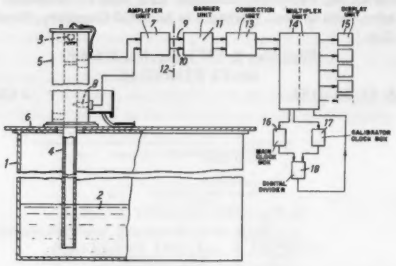
3,834,232
ELECTROMAGNETIC FLOWMETER HAVING SELF-CLEANING ELECTRODES
Heinz Walter Gruner, Irondequoit, and Charles Gladstone Heisig, Rush, both of N.Y., assignors to Sybron Corporation, Rochester, N.Y.
Filed Aug. 22, 1972, Ser. No. 282,854
Int. Cl. G01f 1/00
U.S. Cl. 73—194 EM **10 Claims**



Electromagnetic flowmeter electrodes having flat surfaces lying at angle of around 30° to the direction of flow. Each electrode surface consists of a relatively small conductive area surrounded by a relatively large insulating area.

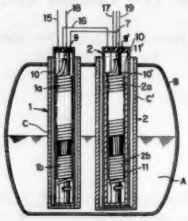
3,834,233
APPARATUS FOR MEASURING THE LEVEL OF THE CONTENTS OF A CONTAINER
Andrew Douglas Willis, Growborough, and Michael Bruce Thurman, East Grinstead, both of England, assignors to Wilson Walton International Limited, Surrey, England
Filed Nov. 3, 1972, Ser. No. 303,408
Claims priority, application Great Britain, Nov. 5, 1971, 51613/71
Int. Cl. G01f 23/28
U.S. Cl. 73—290 V **4 Claims**

Method and apparatus for determing the level of the contents of a container — typically the level of oil in a bulk oil tank are disclosed. An ultrasonic transmitter and receiver arrangement is mounted at the top of the tank to direct sound energy down into the tank and receive an echo from the surface of the contents. In order to compensate for inaccuracies due to changes in the velocity of sound a second receiver is preferably positioned a fixed distance from the transmitter



and both received signals are processed to cancel the effects of any velocity variation in the speed of sound.

3,834,234
LEVEL GAUGE OF LIQUID METAL
Kazuo Kobayashi, Hitachi, and Shoichi Ogaware, Ibaraki, both of Japan, assignors to Sukegawa Electric Co., Ltd., Hitachi-city, Japan
Filed Sept. 21, 1972, Ser. No. 291,080
Claims priority, application Japan, Sept. 30, 1971, 46-76744
Int. Cl. G01f 23/00
U.S. Cl. 73—290 R **3 Claims**

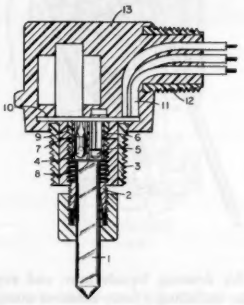


A level gauge of liquid metal which has a detecting element formed with a primary coil and a secondary coil, a compensating element formed with a primary coil and a secondary coil, both elements being inserted in a container of liquid metal, said compensating element covered with metal so as to have a magnetic permeability equal to that of the liquid metal. The output of an oscillator is supplied to the primary coils of the detecting element and compensating element to detect the difference of the induced output at the secondary coils of the respective elements. Thus, reliable measurement may be obtained thereby.

3,834,235
LIQUID AND SOLID SENSING DEVICE
Michael John Bouton, 2558 Interstate, Apt. E., Mesquite, Tex. 75149, and Bob L. Sikes, 2433 Cardinal Ln., Garland, Tex. 75040
Filed Dec. 17, 1971, Ser. No. 209,078
Int. Cl. G01f 23/28
U.S. Cl. 73—293 **3 Claims**

Opto-electronic single point control is a unique concept which uses the combined principles of light reflection and light refraction to activate or deactivate an all solid state switching circuit. When 120 volts AC is supplied to the control circuitry, the light source is activated and projects a beam

of light through a solid quartz or plastic probe. When the device is used to sense liquids, the probe end used for sensing is fashioned in a cone shape. The light transmitted through the probe is internally reflected back through the probe when it is in a gaseous atmosphere. When the end of the probe is subjected to liquid, the light which is transmitted down the probe is refracted out of the probe and into the liquid. Both the internal reflection and the refraction of the light is registered by a light sensitive component which is an integral part of the control circuitry. The presence and absence of light determines the condition of the control circuitry. It will either switch the control circuitry from an off (deactivated) position to an on (activated) position, or vice versa. The activated or deactivated condition of the control circuitry is determined by



which model is used. For liquids, the model 100A is a normally open device that is activated when in contact with liquid. The 100B model is a normally closed device that is deactivated when in contact with liquid.

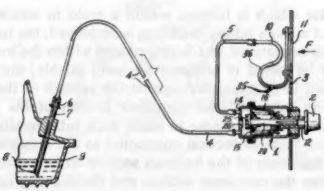
When the device is used as a solid sensor, the probe end is changed from a cone shape to a flat end. Light transmitted through the probe is projected out through the flat end. When the light strikes a solid (non-liquid object), the light is reflected back into the probe and energizes the light sensor. The light sensor in turn activates or deactivates the control circuitry. Activation or deactivation of the control circuitry is again dependent upon the model being used. The 100A solid sensor is a normally closed device which is deactivated when in proximity of a solid. The 100B solid sensor is a normally open device, activated when in proximity of a solid.

3,834,236

DEVICE FOR MEASURING LIQUID LEVEL AND AIR PUMP FOR USE THEREIN

Michel Durin, Paris, France, assignor to Societe Anonyme Automobiles Citroen, Paris, France

Filed Jan. 26, 1973, Ser. No. 327,224
Claims priority, application France, Jan. 25, 1972, 72.2332
Int. Cl. G01f *23/16*
U.S. Cl. 73—302 **9 Claims**



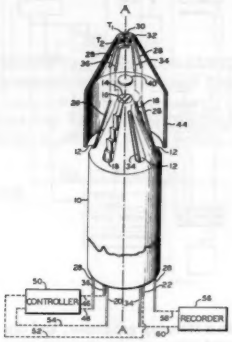
Air pump comprises a first, constant volume chamber having an outlet, a vent to atmosphere, and an inlet connecting it to a second variable volume chamber, the volume of which is controlled by a flexible membrane. Operating means are provided for simultaneously actuating the membrane to reduce the volume of the second chamber and closing said vent so that air is expelled from the second chamber through the first chamber and its outlet, preferably into the pneumatic circuit of a manometric system for measuring the level of liquid in a container, e.g., the level of oil in the crankcase of a motor.

3,834,237

THERMOCOUPLE FOR SURFACE TEMPERATURE MEASUREMENTS

Donald Robertson, Ambler, Pa., assignor to Leeds & Northrup Company, North Wales, Pa.

Filed Oct. 5, 1972, Ser. No. 295,306
Int. Cl. G01k *7/04*; **H01v** *1/04*
U.S. Cl. 73—359 **2 Claims**



The improved surface temperature probe is of the type which utilizes a heater and a differential temperature measurement to control the heater so as to minimize the temperature gradient along the probe. The improvement comprises the protective shielding of the thermocouple junctions by a metal shield and the addition of supplementary heater sections to heat the shield so as to minimize the temperature gradient between the shield and the surface being measured.

3,834,238

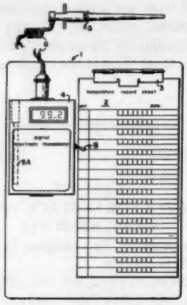
ELECTRONIC THERMOMETER

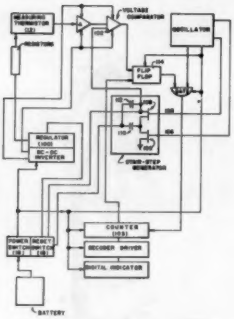
Fritz Kurt Mueller; Billy Otis Martin; Robert Cherry Martin; Bobby Joe Stricklin, and Raymond Leland Weeks, all of Huntsville, Ala., assignors to Royal Medical Corporation, Huntsville, Ala.

Filed Aug. 19, 1971, Ser. No. 173,115
Int. Cl. G01g *7/24*; **G01r** *17/04*; **H03k** *13/17*
U.S. Cl. 73—362 AR **3 Claims**

An electronic thermometer having: a temperature-sensitive probe and one of two optional electronic circuits, each of which has means for changing a basic comparison voltage in steps or increments through a series of stair-stepped voltages toward the amplified small voltage from the thermistor until

the stabilized thermistor voltage and the comparison voltage are equal, and indicating the result in degrees. One of these





circuits comprises a stairstep generator, and the other a set of resistors of different values.

3,834,239

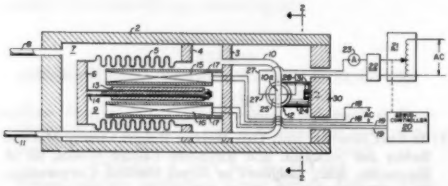
DIFFERENTIAL PRESSURE TRANSDUCER FOR LIQUID METALS

Earle C. King, Evans City, Pa., assignor to Mine Safety Appliances Company, Pittsburgh, Pa.

Filed June 15, 1970, Ser. No. 46,087

Int. Cl. G01l 9/10, 7/06

U.S. Cl. 73—398 R **5 Claims**



A differential pressure transducer for use with liquid metals has a chamber divided into two compartments by a moveable wall. An electromagnetic pump included in an inlet conduit to the low pressure compartment develops sufficient head to equalize the pressure in both compartments. The electrical energy required by the pump is a measure of differential pressure.

3,834,240

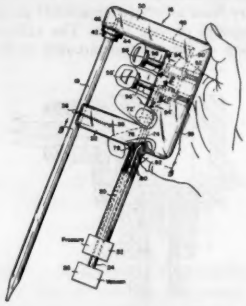
APPARATUS FOR DRAWING LIQUIDS INTO, AND EXPELLING LIQUIDS FROM, A PIPETTE OR THE LIKE

James W. Kenney, Philadelphia, Pa., assignor to Drummond Scientific Company, Broomall, Pa.

Filed Feb. 23, 1973, Ser. No. 335,367

Int. Cl. B01b 3/02

U.S. Cl. 73—425.6 **14 Claims**



Apparatus for drawing liquids into, and expelling liquids from, a pipette, including a body member comprising a hand grip portion and a pipette supporting portion. Duct means are provided in the body member in communication with one end of the pipette held by the pipette supporting portion. Valve means are mounted on the hand grip portion beneath the fingers of the user for selectively connecting the duct means to a vacuum source or an air pressure source.

3,834,241

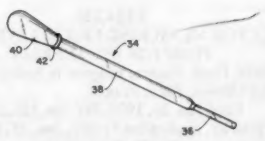
PIPETTE

Ralph F. Garren, 20357 Acre St., Canoga Park, Calif. 91306, and Marvin B. Sarver, 1247 N. Parish Pl., Burbank, Calif. 91506

Filed Apr. 30, 1973, Ser. No. 355,714

Int. Cl. B01l 3/02

U.S. Cl. 73—425.6 **2 Claims**

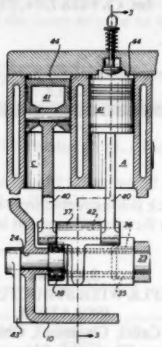


A pipette which is formed within a mold in which a raw material of a given tubing thickness is employed, the tubing to be of a plastic material, the tubing placed within the mold and caused to be raised in temperature until pliable, the plastic tube caused to be expanded against the surface of the mold, the drawing tube and the container section of the pipette being formed of a thickness to make such substantially rigid, an enlarged bulbous section connected to the container section, the thickness of the bulbous section to be substantially thinner than the container section and the drawing tube section whereby the bulbous portion may be readily manually compressed and then permitted to retract back to its at rest state causing a drawing of liquid through the drawing tube section into the container section.

3,834,242
FLYWHEEL CONVERTING OSCILLATING INTO UNIFORMLY ROTATING MOTION

Frederick W. Seybold, 1979 Dogwood Dr., Scotch Plains, N.J. 07076

Filed Dec. 4, 1972, Ser. No. 311,745
Int. Cl. F16h *21/16*
U.S. Cl. 74—25 **6 Claims**



This invention provides a multiple cylinder-piston engine having the cylinders arranged in a rectangle and paired pistons reciprocate an elongated rocker arm.

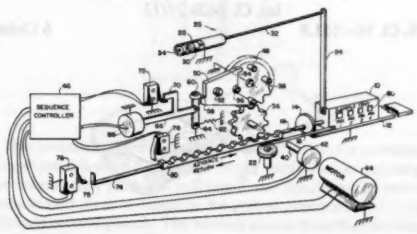
A hollow flywheel is journalled on the engine frame and it is provided with an eccentrically mounted crank arm, pin and gear, the latter meshing with a gear of equal size which is integral with said rocker arm, said arm and gear are rotatably mounted on a stationary shaft which is co-axial with the flywheel.

This stationary shaft has one end supported on the engine frame and the other end on the flywheel. A crank arm and pin is also integral with the stationary shaft and a link connects the crank pins of both crank arms, said crank arms are also provided with gear segments to insure passage thru the dead center positions of the crossed four-bar linkage formed by said link, the flywheel and the two crank arms.

3,834,243
MECHANICAL POSITIONING DEVICE FOR PRECISELY DETERMINING A SERIES OF MECHANICAL LOCATIONS

Raymond William Burke, Anaheim, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Feb. 28, 1973, Ser. No. 336,726
Int. Cl. F16h *55/04*
U.S. Cl. 74—33 **11 Claims**

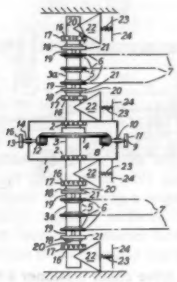


Apparatus for slidably positioning a sample tray biased in a first direction by restoring means, the sample tray being coupled to a rack member coacting with a small motor driven gear for driving the sample tray in a direction opposite to the first direction, the small gear being coupled to a large gear having a plurality of position determining protruding fingers engaging a pawl member. The pawl member is configured for limited pivotal movement about an axis, the pawl having a pocket configured in one end thereof for sequentially engaging the protuding fingers, while the other end of said pawl has a shoulder portion engaging a solenoid actuated stop lever for selectively determining the engagement of the pocket with a predetermined protruding finger. Mechanically coupled to the sample tray is a piston engaging a fixed cylinder, the sample tray being initially motor driven to the extreme limit of its first direction with the solenoid energized to permit pivoting of the pawl member, the sample tray then being precisely positioned in the opposite direction to one or more selected positions under action of selective energization of the stop lever, under the force of the restoring means, the speed of return being controlled by the piston and cylinder. Limit switches are provided for selective sequential control.

3,834,244
POWER TRANSMISSION SYSTEM

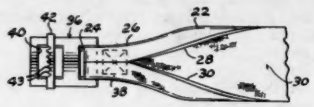
Harry Dugdale Swaine, 15 Northborough Road, London, England

Filed Aug. 14, 1973, Ser. No. 388,175
Claims priority, application Great Britain, Aug. 17, 1972, 38383/72
Int. Cl. F16h *7/00*
U.S. Cl. 74—219 **8 Claims**



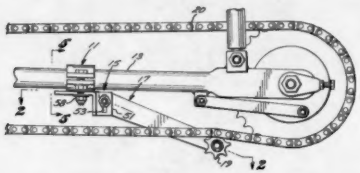
The present invention relates to a power transmission system comprising a housing, a transmission shaft mounted for rotation in that housing and extending outside the housing on either side thereof, a crown wheel gear mounted on the transmission shaft within the housing, a pinion gear in engagement with the crown wheel mounted on an output shaft carried for rotation in the housing, and a plurality of one-way clutches mounted in pairs on said transmission shaft, one of each pair being disposed on each side of the housing, each said clutch comprising a drive member by which a drive may be effected in one direction of rotation from a power source to said transmission shaft through the clutch.

3,834,245
EMERGENCY V-BELT FOR VEHICLES
Salvatore J. Cultrera, 1744 Silverwood Dr., San Jose, Calif. 95124
Filed Aug. 20, 1973, Ser. No. 390,143
Int. Cl. F16g 1/00
U.S. Cl. 74—231 J 3 Claims



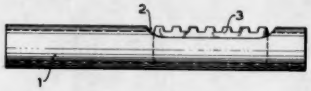
An elongated strip of woven fabric material has a locking type buckle secured to one end thereof for adjustably engaging the other end of the strip when the strip is entrained around a plurality of V-belt type pulleys.

3,834,246
MOTORCYCLE DRIVE CHAIN TENSIONER KIT
Kenneth J. McGilp, Cerritos, Calif., assignor to Excel Tool and Die Corporation, Paramount, Calif.
Filed July 19, 1973, Ser. No. 380,529
Int. Cl. F16h 7/12
U.S. Cl. 74—242.11 B 10 Claims



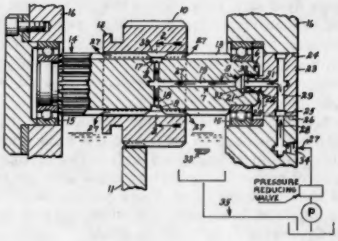
A motorcycle drive chain tensioner kit including a mounting clamp for clamping to a tine formed by the rear fork of a chain driven motorcycle and having an adjustment bracket mounted therebelow, such adjustment bracket being shiftable transversely with respect to such clamp. An elongated carrier arm is mounted on its forward extremity from such bracket and projects rearwardly to have an idler spricket rotatably mounted on the rear extremity thereof for engagement with the drive chain. A torsion spring is connected between the mounting bracket and carrier arm with a tension setting device being connected therewith to adjust the torque applied by such spring and consequently the tension maintained on such drive chain. Consequently, the mounting clamp may conveniently be mounted on the motorcycle tine, the adjustment bracket adjusted transversely with respect to such clamp to align the idler sprocket with the drive chain and the tension setting device adjusted to apply the desired tension to such drive chain to take up slack therein and maintain positive engagement with the drive and driven sprockets of such motorcycle.

3,834,247
TOOTHED RACK FOR A RACK-AND-PINION STEERING GEAR OF MOTOR VEHICLES
Manfred Belsdorf, Meerbusch 1, Poststr. 4a, and Klaus Stuck, Meerbusch 2, Thomas-Mann-Str. 23, both of Meerbusch, Germany
Filed Apr. 17, 1973, Ser. No. 351,839
Claims priority, application Germany, May 31, 1972, 2226443
Int. Cl. F16h 1/04, 55/12
U.S. Cl. 74—422 8 Claims



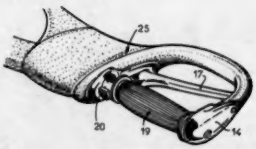
The toothed rack is constructed from a base having a hollow profile into which the toothed segment is fixedly mounted.

3,834,248
TORQUE COUPLE WITH STRUCTURE BORNE NOISE ISOLATION
Charles Thomas Caliri, Cincinnati, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio
Filed July 5, 1973, Ser. No. 376,409
Int. Cl. F16h 55/14, 57/04
U.S. Cl. 74—443 5 Claims



An apparatus for the transmission of torque between two members of a machine which reduces the structure borne vibration and noise through the use of pressurized fluid at the interface of torque transmitting teeth.

3,834,249
HANDLEBARS
Peter William Bothwell, 114 Shipston Rd., Stratford-On-Avon, England
Filed Mar. 13, 1973, Ser. No. 340,717
Int. Cl. B62k 21/12
U.S. Cl. 74—551.8 6 Claims



A handlebar for a motor cycle or the like, which has at one or each end thereof a hand-grip portion and a generally U-shaped rigid guard. The two ends of the guard are connected to the handlebar at respectively opposite ends of the hand-grip

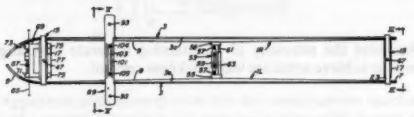
portion so that when the handlebar is in use the guard projects forwardly of the hand grip portion and defines with the latter an opening for a rider's hand gripping said portion, whereby the guard affords protection for the hand in the event of a crash. The guard is provided with a covering of resiliently deformable material. The covering extends around the part of the handlebar to which the inner end of the guard is secured and the outer end of the guard is connected to the outer end of the handlebar by a removable plate. The covering is recessed to receive the free end of a pivotable control lever whilst permitting movement of the lever relative to the hand-grip portion.

3,834,250

METHOD AND APPARATUS FOR TUNING A PAIR OF SKIS

Kenneth R. Fonas, 814 Pittsburgh St., North Versailles, Pa. 15137

Filed June 18, 1973, Ser. No. 371,267
Int. Cl. B21k *17/00*
U.S. Cl. 76—101 R **21 Claims**



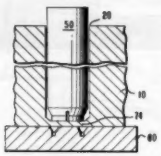
A method and apparatus for tuning a pair of skis in which the skis are secured in spaced relation as a unit tip-to-tip and heel-to-heel with the top surfaces facing each other and the running surfaces in parallel planes. The centers of the skis may be spread apart to remove the bottom camber during tuning. With the skis secured in this relation, they are rotated as a unit to successively present the various edges and the running surfaces for tuning. The apparatus includes a device for quickly and easily holding the unit in the selected positions and a tuning device which incorporates side and bottom edge files and a scraping tool.

3,834,251

METHOD

Curtis Owen Hawkins, Cove City, N.C., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 27, 1973, Ser. No. 336,196
Int. Cl. B21k *5/20*
U.S. Cl. 76—107 S **1 Claim**



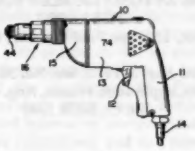
This invention is a method for making punches for punching complicated hollow filament spinning capillaries in one step. An inverse first punch is machined and then used to punch complicated inner recesses in the end of punch stock for the ultimate second punch. The second punch is further finished by machining. In addition, the complete method requires punching a complete female die using the second punch and then punching capillaries in spinneret webs located between the aligned die and second punch.

3,834,252

ADJUSTABLE POSITIVE CLUTCH SCREWDRIVER

William David Abell, Manchester, and William Frank Sindelar, Towson, both of Md., assignors to The Black and Decker Manufacturing Company, Towson, Md.

Filed June 11, 1973, Ser. No. 369,057
Int. Cl. B25b
U.S. Cl. 81—52.4 R **23 Claims**



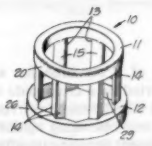
A portable, power-operated tool such as a power screwdriver which includes a housing having a motor, a gear transmission and an output shaft. An output rotary tool member is adapted to be connected to the output shaft by a positive clutch when the tool is applied to a workpiece. A novel arrangement whereby the maximum torque transmitted through the positive clutch can be limited is disclosed.

3,834,253

KEEPER FOR SOCKET WRENCHES

Harry A. Carr, 2934 El Caminito, La Crescenta, Calif. 91214

Filed June 8, 1972, Ser. No. 260,909
Int. Cl. B25b *23/08*
U.S. Cl. 81—125 **9 Claims**



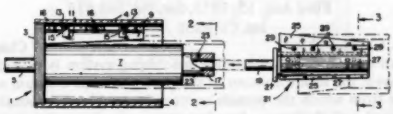
A keeper accessory for use on 12-point socket wrenches to hold a hex fastener captive without need for retainers or modification of a conventional wrench. The accessory is selectively usable with cylinder and box type wrenches and comprises at least one end ringlet preferably supporting two or more parallel legs shaped to lie along a respective point of a wrench with its radially opposed surfaces disposed to frictionally engage a hex face of a fastener and the juxtaposed point areas of the wrench thereby to grip and hold the fastener captive.

3,834,254

TAPERING TOOL

Delmer L. Smestad, P.O. Box 1164, Williston, N. Dak. 58801

Filed Jan. 4, 1973, Ser. No. 320,972
Int. Cl. B23b *5/16*
U.S. Cl. 82—4 C **1 Claim**



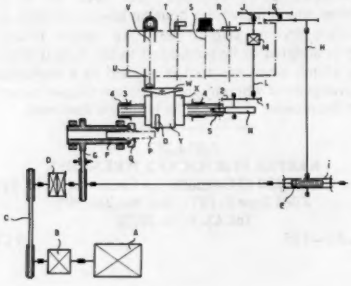
A pipe tapering tool formed in separable parts for internal and external tapering. External tapering is achieved by placing

the tool between a drum and an adjustable outer blade housed in one of the parts. The other part severable therefrom provides adjustable blades for internal tapering, the parts being interconnected for this purpose whereby they may be turned together relative to the pipe.

3,834,255
MACHINE FOR AUTOMATICALLY FORMING SCREW-THREADS

Georges C. Mulot, 152, rue Paul Doumer, Carriere-sur-Seine, France

Filed Aug. 3, 1973, Ser. No. 385,553
Claims priority, application France, Aug. 4, 1972, 72.28310
Int. Cl. B23b *5/46*
U.S. Cl. 82—5 **5 Claims**



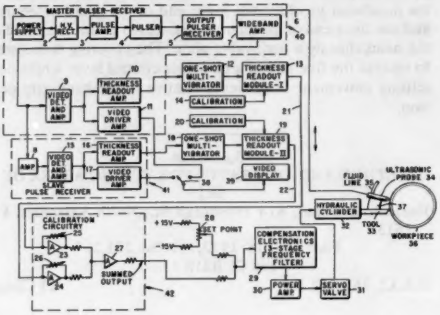
The cutting tool of a machine for automatically cutting screw threads is carried by a cross-slide mounted on the base of the machine. The step-by-step transverse feed of the tool is actuated by a push-rod operating against the cross-slide and backed by an adjustment vernier operating colinearly with the push-rod and mounted on the machine base. Between the vernier and push-rod are peripheral portions of a pair of discs which are mounted face-to-face for rotational movement step-by-step about an axis parallel to the line of action of the push-rod and for movement along said axis. The two faces of each disc are planar and non-parallel, and the angle between the two faces of the disc is the same for each disc. By adjusting the angular positions of the discs relative to each other and the angular position of the disc assembly about said axis, a desired programme of automatic thread-cutting operations can be pre-set.

3,834,256
ULTRASONICALLY CONTROLLED THICKNESS MACHINING

Leonard A. Abbatiello, Oak Ridge, Va.; Loren E. Carey, Lenoir City, Va.; Donald V. Ferree, Lynchburg, Va., and Walter L. Green, Knoxville, Tenn., assignors to The United States of America as represented by the Atomic Energy Commission, Washington, D.C.

Filed Aug. 15, 1973, Ser. No. 388,515
Int. Cl. B23b *25/06*
U.S. Cl. 82—21 A **7 Claims**

An ultrasonically controlled machining system is provided wherein the inside contour of the part is used as a datum surface from which the outside contour is machined to obtain a desired wall thickness. An ultrasonic probe is used to locate the datum surface and an electrohydraulic control system is used to properly position the tool a distance equal to the desired wall thickness. By using ultrasonic sound to control the distance, it is possible to apply this machining technique to most materials or combinations of materials. This concept

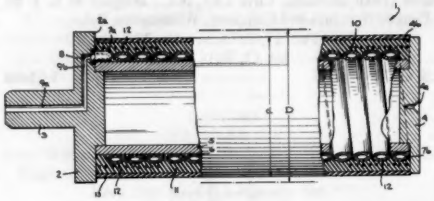


eliminates the necessity of maintaining accurate part alignment to achieve accurate wall thickness control.

3,834,257
RADIALLY EXPANDABLE AND CONTRACTIBLE MANDREL

Wilhelm Ganser, Stolberg-Busbach, Germany, assignor to Uniroyal AG, Aachen, Germany

Filed Apr. 12, 1973, Ser. No. 350,561
Claims priority, application Germany, Apr. 17, 1972, 2218561
Int. Cl. B23b *31/00*
U.S. Cl. 82—44 **11 Claims**



A mandrel or work-piece holder for a tubular blank. The tubular blank may be penetrated by cutting means to provide endless annular elements such as belts for drive or power transmission uses. The mandrel comprises a supporting core having a concentrically arranged radially expandable layer formed by a spirally wound hose. The hose is connected to a source of an inflating medium. Concentric with the hose layer and firmly connected thereto is an intermediate layer of an elastic material. Concentric with the intermediate layer and removable connected thereto is an outer layer of an elastic material. The elasticity of the several layers varies such as to radially decrease.

3,834,258

APPARATUS FOR THE SIMULTANEOUS MACHINING OF A MATERIAL MOVING WITH RELATIVE MOTION WITH RESPECT TO THE TOOLS, IN PARTICULAR FOR CUTTING UP A PLATE OF GLASS

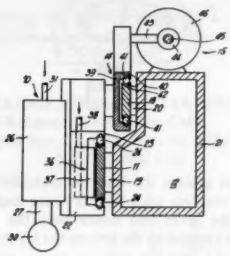
Ernst Zumstein, Butzberg, Switzerland, assignor to Bystronic Maschinen AG, Butzberg, Switzerland

Filed Dec. 4, 1972, Ser. No. 312,034

Claims priority, application Germany, Dec. 7, 1971, 2160545

Int. Cl. B26d *3/08*, *5/02*; B26f *33/02*

U.S. Cl. 83—11 14 Claims



Apparatus with several tools for the simultaneous machining of a material moving with relative motion with respect to the tools, said apparatus to be used in particular for cutting a glass plate to size and comprising a support table for supporting the material and a bridge extending over said table and carrying several tool carrier units displaceable in longitudinal direction by power drive. There is provided a drive means to drive a displacing means transversely to the direction of machining, the individual tool carrier units being connected through disengageable clutches with said displacing means at preset distances from one another.

3,834,259

DISCHARGE DEVICE FOR SLICING MACHINE

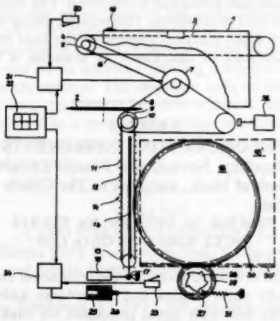
Fritz Kuchler, Klagenfurt, Austria, assignor to Brain Dust Patents Establishment, Vaduz, Liechtenstein

Filed Jan. 30, 1973, Ser. No. 328,114

Claims priority, application Austria, Jan. 31, 1972, 732/72; Mar. 21, 1972, 2390/72; Apr. 14, 1972, 3260/72

Int. Cl. B26d *4/46*

U.S. Cl. 83—69 18 Claims



A discharge device for a slicing machine which comprises a feeding arrangement to receive a loaf of sausage or a like. A driven blade and a conveyor arrangement for the sliced goods are provided which are driven by the feeding arrangement, e.g., in the form of chain ties provided with spikes. A discharger, as well as a discharge platform, which may be moved gradually are arranged such that the conveyor arrangement, which is driven by a gear unit or a toothed belt drive, respectively, is coupled to an electromagnetic clutch, which is driven by an electric pulse control in dependence upon the position of the feeding arrangement, if necessary via another toothed belt drive or motor respectively, preferably an impulse-controlled stepping motor. The latter can be turned off after a pre-determined number of revolutions. The discharge platform may be moved gradually in one direction by an electromagnetic drive with provisions for an electronic control, which drives the electromagnetic drive in dependence upon the movement of the discharge arm. Further a central switchboard is provided, where every button position corresponds to a control interval of electric pulse control for the clutch or the motor respectively and to a number of step impulses of the electronic control for the electromagnetic drive of the discharge platform.

3,834,260

SWITCHING MECHANISM FOR CROPPING AND SAMPLING FRONT AND BACK ENDS OF BAR PRODUCT DELIVERED FROM MILL

Donald Sieurin, Northboro, and Robert Anderson, Worcester, both of Mass., assignors to Morgan Construction Company, Worcester, Mass.

Filed July 2, 1973, Ser. No. 375,759

Int. Cl. B23d *25/08*, *31/00*

U.S. Cl. 83—106 14 Claims

On a rod mill, means for cropping the front and rear ends of the rod and delivering the cropped pieces directly from the shear to a crop box, and including means for dividing the rod, if desired, to produce suitable size coils.

3,834,261

HORIZONTALLY ACTING EXTRUSION DISCARD CUTTING DEVICE WHICH CAN TURN OVER AND TRANSFER EXTRUSION DISCS CUT OFF THE EXTRUSION DISCARD

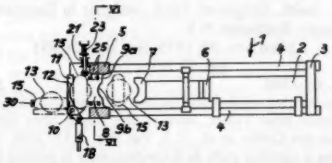
Otto Behrendt, Dusseldorf-Eller, Germany, assignor to Schloemann Aktiengesellschaft, Dusseldorf, Germany

Filed Aug. 7, 1973, Ser. No. 386,436

Claims priority, application Germany, Aug. 11, 1972, 2239543

Int. Cl. B23d *33/00*

U.S. Cl. 83—161 9 Claims



A horizontal extrusion discard cutting device has a cutter head and a moving cutter ram which gives a shear cut in order to separate the extrusion discard into an extrusion disc and a

billet discard. If the extrusion press is using flat billets, the flat extrusion discards are supplied to the cutting device in a vertical position. According to the invention, the vertical, flat extrusion disc from the cut, vertical, flat extrusion discard is moved by the cutter after cutting, against slight lateral resistance, against a vertical turn-over member, the extrusion disc is retained against the vertical turn-over member by a nose on a lower, horizontal part of the turn-over member and by a spring-biased roller for the upper part of the extrusion disc, the turn-over member is mounted on a shaft which is pivotally supported in the lower zone of the cutting head, and the shaft is then pivoted through 90° to bring the extrusion disc into a horizontal position.

3,834,262

STOCK CUTTING MEASUREMENT SYSTEMS

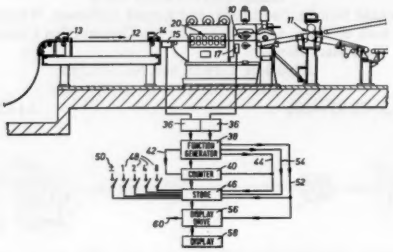
Maurice Noel Lapper, Llanelli, South Wales, Wales, assignor to British Steel Corporation, London, England

Filed Nov. 29, 1972, Ser. No. 310,462

Claims priority, application Great Britain, Dec. 3, 1971, 56285/71

Int. Cl. B26d 7/28

U.S. Cl. 83—345 **8 Claims**



Apparatus for determining the length of portions cut from stock material characterised by a stock pulse generator 15 responsive to the movement of the stock past a cutting device 10 to provide a stock pulse train, the repetition rate of which is related to the speed of advance of the stock; a cutter pulse generator 17 responsive to the cutting device for producing a cutter pulse train, the repetition rate of which is related to the frequency of cutting operations of the cutting device, a counter 40 for counting the pulses produced by the stock pulse generator; means 38 for starting the counter in response to a cutter pulse and for stopping the counter after a predetermined further number of cutter pulses have been generated, whereby the number of stock pulses then recorded by the counter is representative of the length of the last *n* portions cut from the stock, *n* a predetermined integer in excess of one.

3,834,263

APPARATUS FOR SENSING AND MEASURING TENSION OF TOW ENTERING A STAPLE FIBER CUTTER

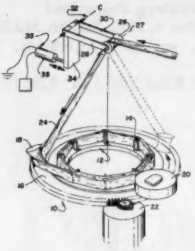
Glen C. Smith, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 30, 1973, Ser. No. 420,491

Int. Cl. D01g 1/04

U.S. Cl. 83—346 **5 Claims**

Apparatus for sensing and measuring tension of a tow entering a staple fiber cutter, such as the staple fiber cutter disclosed in the Coffin et al., U.S. Pat. No. 3,557,648. The tow describes a circular path as it continuously is guided onto the cutter at various points around the periphery of the cutter to be wrapped therearound. Thus the tow continuously changes direction, thereby generating a force with a constant vertical component and a variable horizontal component. The apparatus senses and measures only the vertical components of force and includes a guide roll located above the cutter and on the axis of the cutter for guiding the tow to the cutter and mounted on a pivotally mounted lever, the axis of the lever lying generally in the same plane as the axis of the guide roll. A



transducer bears against the lever to maintain the generally same plane of the two axes and to sense and measure the movement of the lever and hence only the vertical components of force exerted by the tow on the lever.

3,834,264

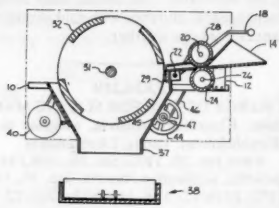
SCRAP MATERIALS PROCESSOR

Jerome F. Moshofsky, 9019 S.W. 15th, Portland, Oreg. 97219

Continuation of Ser. No. 279,238, Aug. 9, 1972, abandoned. This application Feb. 11, 1974, Ser. No. 442,005

Int. Cl. B26d 5/20, 7/06

U.S. Cl. 83—356.3 **2 Claims**



A scrap materials processor is disclosed. The machine has a power driven feed mechanism. The rotary cutting head shears the scrap into small pieces. Pressure on the feed rolls may be manually increased or decreased as material is fed to the cutter head.

3,834,265

CERAMIC CUTTING INSTRUMENTS

Bernard Tafapolsky, Newton, and Francis Edward Flaherty, Canton, both of Mass., assignors to The Gillette Company, Boston, Mass.

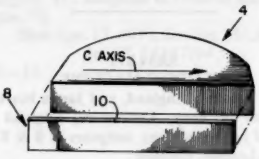
Filed Feb. 16, 1973, Ser. No. 332,914

Int. Cl. B26d 1/00; G01n 1/06

U.S. Cl. 83—651 **13 Claims**

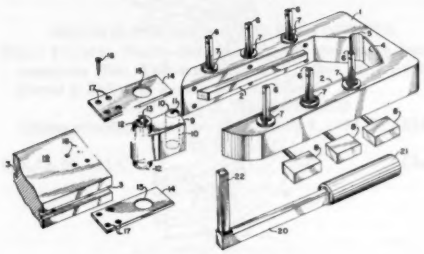
The present invention is concerned with novel cutting edges and especially razor blades and microtome knives formed from sapphire and with novel processes for making cutting edges. The cutting instruments disclosed herein are characterized by having their cutting edges within 30° and preferably parallel to the C-axis (optical axis) of the sapphire. The process for preparing such cutting edges comprises forming the cutting edge blank from the sapphire in a manner such that

the C-axis thereof will be parallel or at least within 30° of being parallel to the cutting edge which is to be formed and



thereafter forming the cutting edges by a combination of mechanical and one or more chemical sharpening steps.

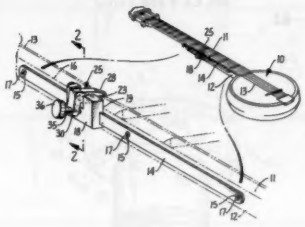
3,834,266
CARTRIDGE STRING GUITAR ASSEMBLY
Robert Harold Robinson, Chowchilla, Calif.
Filed Nov. 23, 1973, Ser. No. 418,664
Int. Cl. G10d 1/08
U.S. Cl. 84—267 **6 Claims**



A cartridge string guitar assembly having a key head slidably mounted in a slideway upon a neck shank operatively movable by a cam and lever mechanism. Six square-headed key posts are revolvably mounted on the key head and connected to gear-driven tuning handles. A cartridge string housing comprising all six guitar strings as a unit and a rear bracket containing the opposite ends of the strings is inserted onto the guitar by means of six cartridge spools within the housing and each having a square hole provided vertically through its center which interlocks with its respective square-headed key post. Each of the spools has a guitar string wrapped around its cylindrical body for individually tuning same. A lever is then inserted into the pivot shaft of the cam, the shaft having a square socket vertically through its axis for turning the cam from inoperative to operative position thereby forcing the key head outward on its slideway creating a miminum amount of tension on the strings. The opposite ends of the strings are contained in a detachable bracket which is designed to be either injected into a groove of a bridge or extracted from the same in a simple operation. The strings are subsequently tuned in the usual manner.

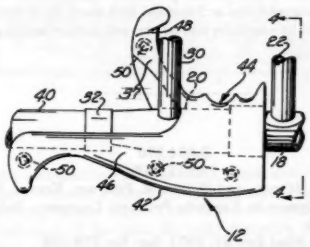
3,834,267
CAPO FOR FIVE STRING BANJO
Richard Shubb, 1701 Woodhaven Way, Corte Madera, Calif. 94611, and David Coontz, 2248 Concord Ave., Concord, Calif.
Filed Sept. 27, 1973, Ser. No. 401,181
Int. Cl. G10d 1/10
U.S. Cl. 84—318 **8 Claims**

A capo for the fifth string of a five string banjo comprising an elongated guide bar which is mounted flush against the side of the banjo's neck laterally adjacent the fifth string, a body slidably mounted on the bar, a lever arm pivotally supported by said body, one end of which extends over the fifth string



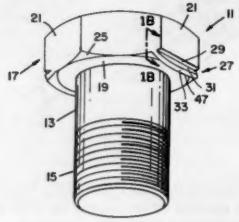
and means for raising the other end of the lever arm whereby said one end is pivoted down against the fifth string exerting enough pressure thereon to effectively capo it.

3,834,268
TROMBONE SUPPORT
George T. McCracken, Mayfield Village, Ohio, assignor to King Musical Instruments, Eastlake, Ohio
Filed Sept. 20, 1973, Ser. No. 399,347
Int. Cl. G10g 7/10
U.S. Cl. 84—453 **12 Claims**



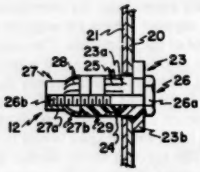
A support structure for supporting a trombone in the hand of a player with the wrist and forearm of the player having an in-line position when supporting the trombone in a playing position includes a support means for engaging with the stationary slide member of the trombone. The support means includes a first surface portion for engaging with the palm of the hand of a player and supporting substantially the entire weight of the trombone in the palm of the player's hand and a second surface portion disposed substantially parallel to the first surface portion for engaging with at least two of the fingers of the hand of the player. The support means further includes a third surface portion disposed substantially perpendicular to the first and second surface portions for engaging with the thumb of the hand of the player. The second and third surface portions cooperate with the fingers and thumb respectively of the player's hand to control the angular orientation of the trombone relative to the player while the weight thereof is supported by the first surface portion of the palm of the player's hand. The support means enables the player to support the trombone in a position which renders the player less susceptible to fatigue than known trombone supports.

3,834,269
STRESS INDICATING BOLT
Jack G. Ohringer, 1435 Dolores St., San Francisco, Calif. 94110
Filed Oct. 24, 1972, Ser. No. 300,087
Int. Cl. F16b *31/02*
U.S. Cl. 85—62 1 Claim



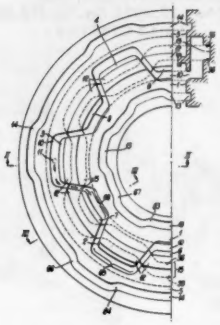
A stress indicating nut or bolt having a wedged slit formed near the bottom of the side of the head. The slit is formed by a non-material removing technique such as forging or the like. The formation of the slit results in the formation of a lip that extends below the lower plane surface of the head of the nut or bolt. The size and angle of the lip are selected to prevent exceeding the elastic limit of the lip when it is closed by tightening the nut or bolt against a surface. When the slit is closed, the stress in the bolt shank is accurately known. Alternatively, the lip may be partially closed wherein the degree of closure indicates shank stress. In the preferred embodiment two oppositely positioned lips are formed and each lip is curved to provide great lip elasticity and to prevent surface scoring.

3,834,270
FASTENER
Lee Triplett, Magna, and Wilmer R. Peterson, Kearns, both of Utah, assignors to Expando Products Company, Salt Lake City, Utah
Filed July 27, 1972, Ser. No. 275,789
Int. Cl. F16b *13/06*
U.S. Cl. 85—70 2 Claims



A fastener for securing members together using a rotatable driver tool from one side of the members. The fastener has a holding member locked to an expanding member and a rotatable member is inserted through the holding and expanding members to be threaded into a compression member engagable with the expanding member. Means are provided to expand the compression member as necessary to insure retention of the expanding member.

3,834,271
BRAIDING MACHINE
Ronald Hinds, Woolton, England, and James Martin Akister, deceased, late of Bury, Lancashire, England (by Nora Akister, legal representative), assignors to B & F. Carter & Co. Limited, London, England
Filed Sept. 20, 1973, Ser. No. 398,972
Claims priority, application Great Britain, Sept. 20, 1972, 43562/72
Int. Cl. D04c *3/20*
U.S. Cl. 87—46 10 Claims



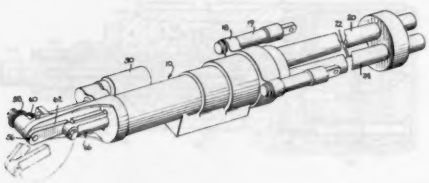
A high-speed braiding machine comprises a central disc and a surrounding annulus which are both stationary with respect to a chosen frame of reference for all the motions. Lobes on the inner periphery of the annulus are intercalated with lobes on the periphery of the disc to define between them an endless continuous sinuous gap; and carriers for bobbins of an inner set are mounted to one side of the disc and annulus so as to be rotatable about a machine axis passing through the central area of the disc whilst threads from bobbins mounted thereon pass through the sinuous gap to a braiding point spaced from the disc on its opposite side. On the side of the disc and annulus facing the braiding point and partly carried by the lobes of each of them is a circular track, concentric with the machine axis, the path of which repeatedly crosses the sinuous gap, but the track is interrupted where it does so. Carriers for bobbins of an outer set mounted on the said track are each of sufficient length in the direction of the track to pass freely over the gaps therein. Concentric central and peripheral actuator heads on the same side of the disc and annulus as the track are mounted for rotation in unison in the opposite direction to the carriers for the bobbins of the inner set, the central actuator head having an external radius less than the minimum radius of the lobed disc and the peripheral actuator head correspondingly having an internal radius greater than the maximum internal radius of the lobes annulus. On each actuator head a series of actuator fingers, one finger for each carrier of the outer set, can be projected into the annular gap between the actuator heads to engage the associated carrier and can be withdrawn to clear the said sinuous gap to allow passage of thread from a bobbin of the inner set. When the machine is in operation each carrier of the outer set is always engaged by at least one actuating finger but the passage of threads from the inner set of bobbins is not obstructed.

3,834,272

MULTIBARREL AUTOMATIC WEAPON

Raymond Arthur Patenaude, and Ivar Scott Tonseth, Jr., both of Burlington, Vt., assignors to General Electric Company, Burlington, Vt.

Filed Apr. 17, 1973, Ser. No. 351,987
Int. Cl. F41d 7/04
U.S. Cl. 89—12 14 Claims



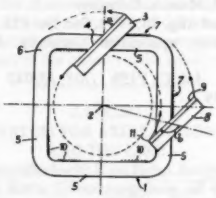
A "Gatling" type gun is provided with a single actuator rod for intermittently driving a plurality of bolts.

3,834,273

METHOD FOR FACING THE ENDS OF PIPES

Pierre Peytavin, Neuilly-Sur-Seine, France, assignor to Societe amonyme dite: Vallourec (Usines a Tubes de Lorraine-Escaut et Vallourec Reunies), Paris, France

Filed July 5, 1972, Ser. No. 269,223
Claims priority, application France, July 9, 1971, 71.25248
Int. Cl. B23b 3/12
U.S. Cl. 90—11 C 1 Claim



Method and apparatus for facing or tooling the ends of pipes or steelworks and especially non-circular pipes, making use of a tool-holder moved in rotation in relation to the pipe or steelwork and moved in translation towards said pipe or steelwork, characterized in that each portion of said end being faced is submitted to the alternate cuts of at least two cutting blades, at least one of said cutting blades being so directed as to cut out the burrs produced by the other cutting blade on said end.

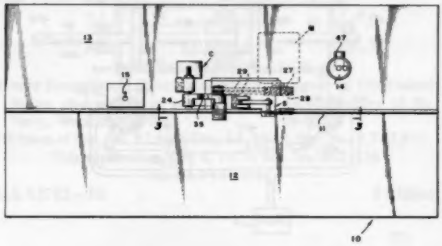
3,834,274

CHAMFERING APPARATUS

Daniel J. Dowd, Williamsport, Pa., assignor to Westvaco Corporation, New York, N.Y.

Filed July 2, 1973, Ser. No. 375,655
Int. Cl. B23c 3/12
U.S. Cl. 90—11 R 11 Claims

Each one of a pair of pivot arms is pivoted at one end to a stationary support, the pivots being in vertically spaced relation. The free end of each arm carries a driven shaft journaled therein. The shafts are free floating and are disposed in vertically spaced relation with their axes in a common vertical plane. Each shaft carries a chamfering tool and a guide roller therefor arranged in close proximity. Biasing means yieldingly urges the free ends of the pivot arms towards each other so that their respective guide rollers and tools forcibly engage the top and bottom faces of a workpiece passed therebetween. The shafts are driven from a single motor common thereto,



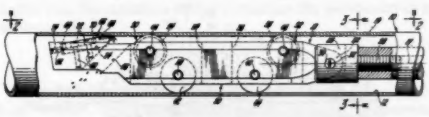
using pulley and elastic belt drive connections. A similar arrangement of pivot arms carries means for applying liquid stain to the surfaces chamfered by the tools.

3,834,275

WELD BEAD REMOVAL PROCEDURE

Tandy H. Newland, Waynesville, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed July 25, 1973, Ser. No. 382,316
Int. Cl. B23d 1/00
U.S. Cl. 90—24 B 2 Claims



In the manufacture of cylindrical, seam-welded tube from strip stock wherein a strip is cold rolled into a cylindrical tube and the longitudinal edges of the strip are welded along a longitudinal seam of the tube, the weld operation leaving a longitudinal, raised bead on the internal cylindrical surface of the tube, a procedure for removing the weld bead including the steps of distending the internal surface of the tube in a plane containing the weld bead to a predetermined dimension exceeding the nominal internal diameter of the welded tube thereby to locate the bead at a constant radial distance from the longitudinal axis of the tube, disposing within the tube a cutting tool having a cutting edge located at a fixed radial distance from the axis of the tube exceeding the constant radial distance, and effecting relative longitudinal movement between the cutting tool and the tube so that the weld bead is removed to a constant depth.

3,834,276

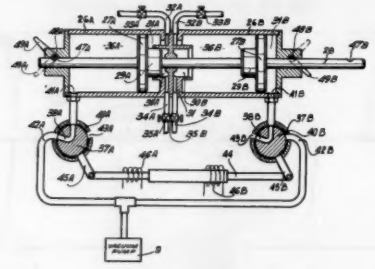
RAMS

Maurice Paul Gournelle, 1 rue des Bruyeres, Asnieres, Hauts de Seine, France

Filed Sept. 7, 1971, Ser. No. 178,153
Claims priority, application France, Sept. 8, 1970, 70.32546
Int. Cl. F15b 13/044, 15/22, 15/26
U.S. Cl. 91—51 5 Claims

In a fluid-operated ram a piston member is reciprocable within a casing and divides the casing into two chambers. One of the chambers is arranged to be connected to a source of

driving fluid while the other is arranged to be evacuated whereas the piston member is held by a quick-release



mechanism, e.g. a mechanical bolt or an electromagnet arranged to co-operate with part of the piston member.

3,834,277

HYDRAULIC SERVO UNIT FOR AUTOMOTIVE BRAKING SYSTEM

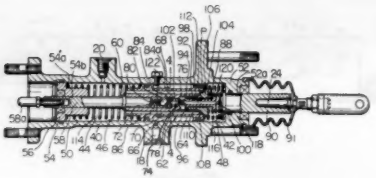
Keiichiro Yabuta, and Kazuaki Shimizu, both of Yokohama, Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Nov. 8, 1972, Ser. No. 304,678

Claims priority, application Japan, Dec. 11, 1971, 46-100347

Int. Cl. F15b 9/10

U.S. Cl. 91—376 **9 Claims**



A hydraulic servo unit for use with a master cylinder of a hydraulic braking system of a motor vehicle and adapted for reducing the physical effort required of a vehicle driver for producing a braking effect. The servo unit includes a housing having an inlet and an outlet, a power piston slidably accommodated within said housing and producing an actuating force to be transmitted to the master cylinder when fluid under pressure is applied on the power piston, valve means connected with the power piston for controlling the application of fluid under pressure on said power piston, and actuating means for controlling the valve means in accordance with a brake pedal position.

3,834,278

POWER STEERING SYSTEM WITH AUXILIARY POWER CAPABILITY

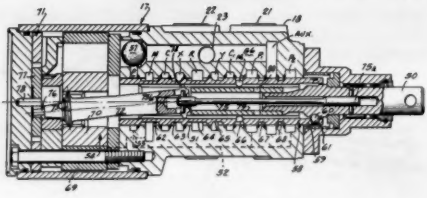
Raymon L. Goff, and Jim L. Rau, both of Lafayette, Ind., assignors to TRW Inc., Cleveland, Ohio

Filed Dec. 15, 1972, Ser. No. 315,502

Int. Cl. F15b 11/00

U.S. Cl. 91—413 **5 Claims**

A vehicular power steering system including a primary hydraulic circuit for operating the steered wheels and a secondary hydraulic circuit for operating auxiliary equipment such as an implement or the like which may be attached to the vehicle. The system includes a fluid controller for controlling the flow of pressurized fluid from a power pump to the primary or steering circuit and the implement or secondary circuit. The fluid controller includes a valve mechanism which is constructed and arranged to provide the primary hydraulic circuit with pressurized fluid in the amount necessary to produce the desired steering maneuver while furnishing the secondary



hydraulic circuit with the excess pressurized fluid supplied by the power pump. Thus the requirements of the primary hydraulic circuit may be always satisfied and have priority over the requirements of the secondary circuit in all modes of operation.

3,834,279

METHOD AND DEVICE FOR ELECTROHYDRAULIC CONTROL OF A HYDRAULIC ACTUATOR

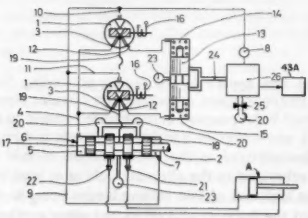
Holm Diethard Boss, and Hans Albert Butschek, both of Munich, Germany, assignors to Messerschmitt-Bolkow-Blohm GmbH, Munich, Germany

Filed Aug. 20, 1971, Ser. No. 173,525

Claims priority, application Germany, Aug. 21, 1970, 2041681

Int. Cl. F15b 11/08, 13/042

U.S. Cl. 91—459 **7 Claims**

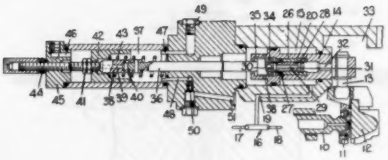


Method and apparatus for the electric hydraulic control of a hydraulic actuator, said control comprising a redundant servovalve circuit with switching and monitoring logic. The apparatus has a plurality of electrohydraulic servovalves each controlled by separate electrical input channels and connected to a central pressure medium source. The control further has a control spool triggered by the servovalve to control the actuator and a hydraulic logic system for monitoring errors in the servo output signal. The positioning land of the control spool is acted upon on the one side by one group of signals consisting of the combined output signals of the same sign from one selected group of servovalves and is acted upon on the other side by the central pressure medium supply while the remaining servovalve signals are applied separately to a hydraulic logic system including a comparator and switching logic means.

3,834,280
ACTUATORS FOR STROKE CONTROL IN HYDRAULIC MACHINES

Brian Paul Jones, Huyton, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Feb. 13, 1973, Ser. No. 332,206
Int. Cl. F04b *1/00*
U.S. Cl. 91—505 **9 Claims**

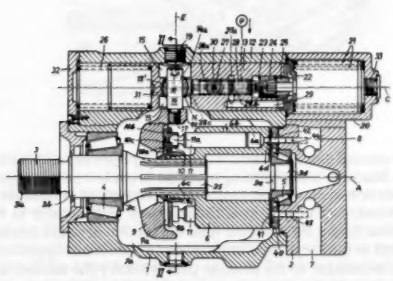


An actuator for varying the stroke of a variable stroke swash plate pump in which there is provided a body defining a cylinder within which slides a differential area, hollow piston connected to the swash plate of the pump. A passage connects the cylinder in the smaller area side of the piston with whichever of the ports of the pump is at the higher pressure via a shuttle valve. A spool valve is slidable in a sleeve in the hollow piston and has a sleeve secured thereto. The hollow in the piston is connected on one side of the spool valve with a chamber in the pump and on the other side of the spool valve with the cylinder on the larger area side of the piston. A plunger is connected with the spool valve via the sleeve secured thereto and carries an abutment against which an element slidable in a further chamber is urged by a spring. The further chamber is supplied with a control pressure signal which controls the movement of the spool valve so that the magnitude of a servo pressure derived from the pump port pressure is controlled, with the servo pressure being applied to the larger area side of the piston via the spool valve.

3,834,281
CONTROL SYSTEM FOR AXIAL-PISTON MACHINES AND THE LIKE

Walter Heyl, Oberafferbach; Karl-Heinz Bergmann, Feldkahl, and Hermann Kern, Grosskrozenburg, all of Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Germany

Filed Jan. 22, 1973, Ser. No. 325,889
Claims priority, application Germany, Jan. 31, 1972, 2204466
Int. Cl. F01b *3/00*
U.S. Cl. 91—506 **8 Claims**

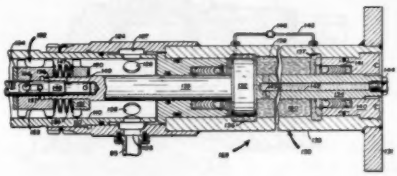


A motion-transmitting system for converting linear actuating movement into a pivotal movement of a controlled member, especially for the control of an axial-piston machine having a tiltable controlled member by a working piston capable of linear movement, comprises a cylindrical guide body rotating in a cylindrical bore of a working piston and connected to the control member by a cylindrical pin received in a transverse bore of the cylindrical guide body. The pin is preferably threaded directly to the controlled member of the axial piston machine.

3,834,282
ACTUATOR AND LATCH

Sverre Kongelbeck, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Division of Ser. No. 97,686, Dec. 14, 1970, Pat. No. 3,742,813. This application May 4, 1973, Ser. No. 357,136
Int. Cl. F15b *15/22*
U.S. Cl. 92—10 **5 Claims**

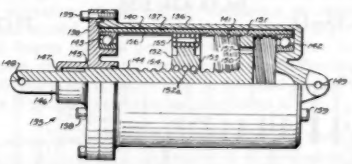


The invention relates to actuator mechanisms and particularly provides a shock-absorbing actuator apparatus comprised of an actuator piston buffered by both a mechanical buffer and a hydraulic buffer, the mechanical buffer being comprised of stacked Belleville washers, a driven element carried on a buffer piston rod, and a driving element carried on a buffer rod, the structure acting to cushion the movement of an actuator piston.

3,834,283
FLUID-OPERABLE LINEAR ACTUATORS

Rudi Beichel, and Clifton J. Reynolds, both of Sacramento, Calif., assignors to Aerojet-General Corporation, El Monte, Calif.

Division of Ser. No. 157,296, June 28, 1971, Pat. No. 3,763,747. This application July 20, 1973, Ser. No. 381,315
Int. Cl. F01b *3/00*
U.S. Cl. 92—33 **2 Claims**



A linear actuator according to the present disclosure includes an axially reciprocable piston having means controlling the radial position of the piston. Means is provided for imparting fluid pressure to opposite sides of the piston causing the piston to move axially. The piston is threadably engaged to a drive means so that axial movement of the piston imparts rotation movement to the drive means. An axially moveable thrust rod is threadably assembled to the drive means so that rotation of the drive means imparts axial motion to the thrust rod. In one form of the device, the piston is threadably engaged to the thrust rod which in turn is restrained from rotational movement. The piston is also threadably engaged to a sleeve which rotates with the piston, the sleeve being threadably engaged to the thrust rod so that radial movement of the sleeve drives the

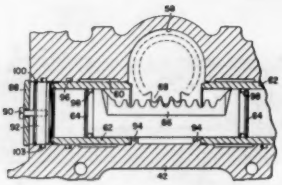
thrust rod axially. In another form of the device the piston is keyed to a key slot in a cylindrical bore, the key slot being helically wound so that the advance of the thrust rod is dependent upon the algebraic sum of the advance of the threaded assembly and the advance of the helical key slot.

3,834,284

HYDRAULIC STEERING FOR TRACTORS AND LIKE VEHICLES

Richard Treichel, Cedar Falls, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Apr. 5, 1973, Ser. No. 348,165
Int. Cl. F01b *9/00*; F16j *11/04*
U.S. Cl. 92—136 **10 Claims**



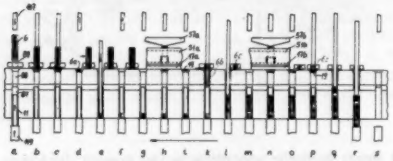
A hydraulic steering system of the class described in which steerable wheels are connected to a shaft having a pinion in mesh with the rack of a piston means and wherein each piston of the double-ended piston means is carried in a removable liner that is in turn carried in a bore or chamber of the basic housing. Each liner is constructed and mounted in such a way as to avoid axial displacement during operation of the system.

3,834,285

METHOD AND MACHINE FOR THE PRODUCTION OF COMPOSITE FILTER MOUTHPIECE

Bernhard Schubert, Neu Boernsen, and Otto Blidung, Geestchact, both of Germany, assignors to Hauni-Werke Korber & Co. K.G., Hamburg, Germany

Filed July 25, 1972, Ser. No. 275,096
Claims priority, application Germany, July 26, 1971, 2137318; July 26, 1971, 2137319; Sept. 10, 1971, 2145375
Int. Cl. A24c *5/50*
U.S. Cl. 93—1 C **27 Claims**



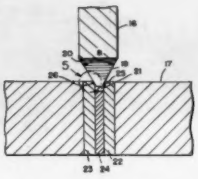
Filter mouthpieces with one or more thin filter disks of first filter material and one or more filter plugs of second filter material are produced by inserting alternating filter plugs and filter disks into prefabricated tubes which move sideways, by inserting filter disks between filter plugs which form a single file and travel with a web of wrapping material which is thereupon draped around the alternating filter disks and filter plugs, or by inserting filter disks between groups of axially aligned tobacco rod sections and filter plugs and thereupon wrapping adhesive-coated uniting bands therearound.

3,834,286

PLY-BONDING METHOD, APPARATUS AND PRODUCT

Ernst Daniel Nystrand, Green Bay, Wis., assignor to Paper Converting Machine Company, Green Bay, Wis.

Filed Oct. 3, 1972, Ser. No. 294,628
Int. Cl. B31f *5/00*
U.S. Cl. 93—1.1 **5 Claims**



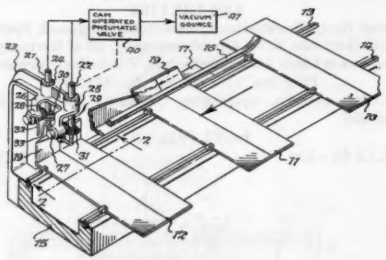
Ply-bonding method, apparatus, and product wherein at least two webs are advanced between a notched, beveled wheel and two beveled anvil surfaces to subject the webs to a pair of intermittent angled compressive forces.

3,834,287

METHOD AND APPARATUS FOR OPENING TUBES OF FLEXIBLE MATERIAL

Clinton R. Hollis, Camden, Ark., assignor to International Paper Company, New York, N.Y.

Filed June 29, 1972, Ser. No. 267,361
Int. Cl. B31b *1/80*
U.S. Cl. 93—35 R **3 Claims**



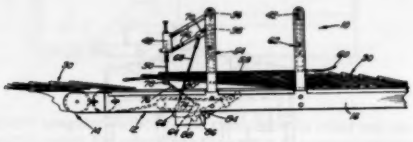
A method and apparatus for spreading open the ends of bag tube blanks in a bag forming machine wherein a pair of opposing suction cups, one on each side of the path of movement of the blanks are moved in a circular path with respect to the machine frame. At the same time the suction cups are counter rotated at the same angular speed but in directions opposite to their movement in the circular path whereby the suction cup faces maintain constant their angular relationship with respect to the machine frame. The paths of movement of the cups are selected to provide concurrent tangential passage of the cups with the two walls of the bag blank and a suction pressure is applied to the cups when they are in contact with the blank. The blank is opened by action of the suction pressure as the cups move away from each other.

3,834,288

INTERCEPTOR FOR FORMING GAPS IN PAPERS CARRIED BY A CONVEYOR

Roy E. Behrens, and Leo O. Donahue, both of Highland, Calif., assignors to Graphic Engineers, Inc., Highland, Calif.

Filed Mar. 29, 1973, Ser. No. 346,043
Int. Cl. B31b *1/98*
U.S. Cl. 93—93 R 4 Claims



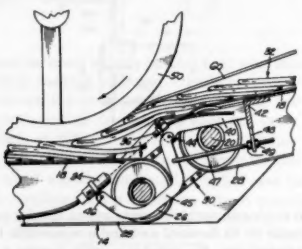
An interceptor for opening up gaps at measured intervals in a continuous stream of shingled papers carried by a belt conveyor, comprising a paper lift disposed below said papers, one end of which tilts up to raise the papers off the belt, while a spring-loaded plunger simultaneously moves downwardly from above to pinch the papers against the lift, allowing the last paper ahead of the gap to pull out, while the papers behind it are stopped. At the same time, a generally horizontal, elongated paper leveler moves downwardly from above and cooperates with the paper lift to form a long wedge-shaped space into which the papers crowd in a shortened shingle as the conveyor continues to advance. When the gap has been opened, the lift lowers the papers back onto the conveyor belts, and the leveler and spring-loaded plunger are simultaneously raised, releasing the stream of papers to move with the conveyor.

3,834,289

PHOTOELECTRIC COUNTER FOR PAPER CONVEYOR

Roy E. Behrens, and Leo O. Donahue, both of Highland, Calif., assignors to Graphic Engineers, Inc., Highland, Calif.

Filed Apr. 2, 1973, Ser. No. 347,191
Int. Cl. B31b *1/96*
U.S. Cl. 93—93 C 7 Claims



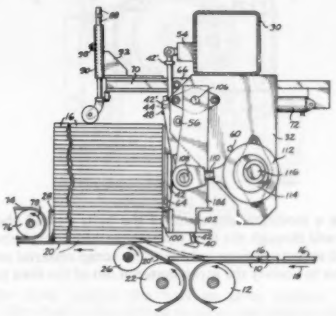
A photoelectric counter for a belt conveyor system that transports a continuous stream of shingled papers, said conveyor system comprising first and second conveyor sections, the first section delivering the papers to the second section, and the discharge end of the first section being elevated above the receiving end of the second section, so that the trailing edges of the papers flip downwardly as they leave the first section. A photoelectric cell and lamp are mounted under the conveyor sections at the point where the papers transfer from one to the other, with the light beam from the lamp positioned where it is interrupted by the downward flipping of the trailing edges of the papers. A wheel resting on the top surface of the papers presses the papers downwardly and bends them into an arcuate curve of relatively short radius, causing the trailing edges to flip smartly downwardly in a brisk and positive movement, to interrupt the light beam and actuate the photoelectric cell.

3,834,290

APPARATUS FOR COUNTING AND STACKING SHEET MATERIAL

Victor R. Nelson, 2700 S.W. Summit Dr., Lake Oswego, Oreg. 97034

Filed Apr. 26, 1973, Ser. No. 354,693
Int. Cl. B31b *1/98*
U.S. Cl. 93—93 C 7 Claims



Sheets of material, such as cardboard container blanks, are conveyed to a stacking station sequentially where they are stacked vertically from underneath, the sheets being counted by counter mechanism as they are delivered to the stacking station. When a desired number of sheets have been stacked, the counter activates mechanism to extend a finger under the stack. Continued stacking of sheets under the finger elevates the latter along with the overlying sheets to a position at which the finger effects activation of ejector mechanism which removes the counted stack from above the finger to an outfeed conveyor. The finger then is retracted and lowered to initial position for subsequent extension. When the desired number of sheets have been assembled into a second stack, the counter activates mechanism to extend a second finger under the stack. Continued stacking of sheets under the second finger elevates the latter to a position at which it effects activation of the ejector mechanism to remove the counted second stack from above the second finger. Additional fingers may be provided to continue the foregoing sequence, after which the cycling reverts to the first finger. Alternatively, a single finger may be provided for use with all stacks, if the rate of stacking accommodates it.

3,834,291

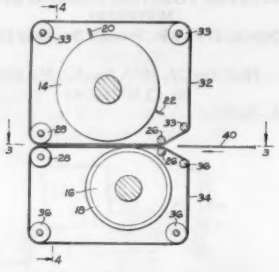
STRIPPING APPARATUS AS USED IN THE PRODUCTION OF CARDBOARD AND LIKE BLANKS

Thomas Desmond Bishop, Solihull, England, assignor to The Deritent Engineering Company Limited, Birmingham, England

Filed July 7, 1972, Ser. No. 269,777
Claims priority, application Great Britain, July 10, 1971, 32476/71
Int. Cl. B31b *1/00*
U.S. Cl. 93—36 A 5 Claims

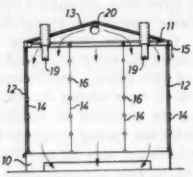
The invention provides stripping apparatus for use in the manufacture of cardboard and similar blanks in which the cut blanks are passed through a roll pair, one of the rolls having pins or projections to engage with the scrap areas of the blank and deflect them out of the feed path, and in which each roll is encircled by a series of conveyor belts so that the belts serve to maintain the blank in the feed path, the belts being adjusted

along the axes of the rolls so as to engage the blank only over the areas which are to be maintained in the feed path and not over the areas which are to be displaced out of the feed path as



scrap; in a modification, some of the belts extend about the one roll and through the feed path, these additional belts being arranged so as to engage only with the scrap material and they thus serve to convey the scrap material out of the feed path.

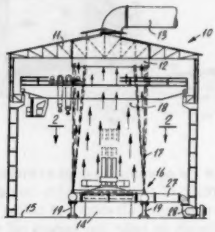
3,834,292
HEAT INSULATING PROTECTIVE COVER FOR TEMPERATURE SENSITIVE GOODS
Erik Ivar Sund, Valhallavagen 134, 114 41 Stockholm, Sweden
Filed Apr. 23, 1973, Ser. No. 353,622
Int. Cl. F24f *13/00*
U.S. Cl. 98—32 **4 Claims**



A heat-insulating protective cover for temperature sensitive goods, comprising a carrier frame to be positioned over the top surface of the temperature sensitive goods, means supporting said frame from underneath, and withdrawable walls of flexible heat-insulating material extending around and over said carrier frame, said walls being lowerable from a top position to abutment against a goods carrying surface under said carrier frame with said carrier frame maintained in an unchanged position.

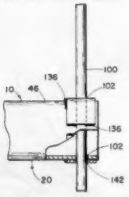
The protective cover is preferably provided with means for the supply of temperature controlled air to the space under the protective cover and with means for forming a free space between said cover and the stored goods, so as to ensure circulation of the temperature controlled gas in the protective cover.

3,834,293
EQUIPMENT FOR CONVEYING SMOKES AND PRODUCTS OF THE COMBUSTION IN A SMELTING FURNACE
Luigu Danieli, 33042 Buttrio (Udine), Italy
Filed Nov. 22, 1972, Ser. No. 308,764
Int. Cl. F24f *9/00*
U.S. Cl. 98—36 **5 Claims**



An equipment for the collecting and conveying smokes and combustion products of a smelting furnace. Such equipment comprises blowing means generating a screen of compressed air around the furnace, the said air screen forming a vertical closed chamber conveying the smokes leaving the furnace to a hood located above.

3,834,294
GRAIN DRYER AND AERATOR
Marion E. Wurdeman, and James A. Wurdeman, both of Columbus, Nebr.
Filed Mar. 26, 1973, Ser. No. 344,828
Int. Cl. B65g *3/08*
U.S. Cl. 98—57 **4 Claims**

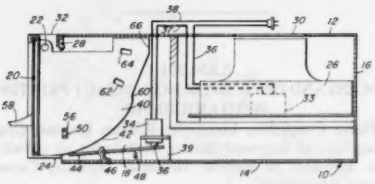


A grain dryer and aerator having a long tubular portion with auger threads on its forward end and a removable fan housing on its rearward end, the tubular portion having a reinforced part with handle mounting aperture means therethrough, the aperture means being blocked by a portion of the fan housing.

3,834,295
OVEN HOOD WITH AUTOMATIC SWITCH
Harry W. Seidel, Mertztown, Pa., assignor to Raytheon Company, Lexington, Mass.
Filed Dec. 12, 1973, Ser. No. 424,248
Int. Cl. F23j *11/02*
U.S. Cl. 98—115 K **7 Claims**

An exhaust hood for use with an oven or the like comprising a shell having a pivotly mounted faceplate carrying on its inner side a cam having an edge of irregular surface contour, a switch in the shell electrically connected between an external

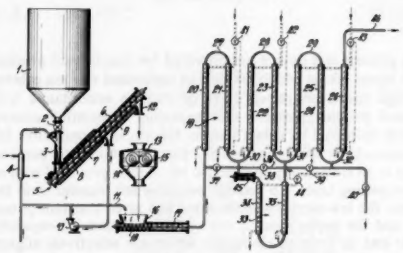
source of power and an exhaust fan within the shell, and a pivoted switch actuator or cam follower which at one end engages the irregular surface of the cam and at its other end engages the switch for controlling the switch in correspondence with the position of the actuator on the cam surface.



3,834,296
CONTINUOUS PRODUCTION OF BEER WORT FROM DRIED MALT

Wolfgang Kehse, Ahrensburg, and Uwe Jess, Hamburg, both of Germany, assignors to Extraktionstechnik Gesellschaft fur Anlagenbau mbH, Hamburg, Germany

Filed July 26, 1973, Ser. No. 382,714
Claims priority, application Germany, Aug. 1, 1972, 2237767
Int. Cl. C12c *7/14, 7/16*
U.S. Cl. 99—276 **7 Claims**



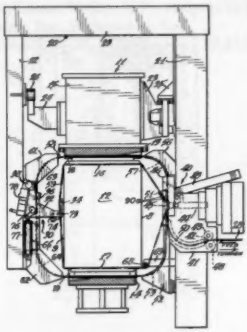
An apparatus for continuously making beer wort from dried malt has a malt soaking unit and a malt crusher which is adapted to receive the soaked malt from the unit and has at least two smooth-surface cooperating rolls and drive means for driving them at differential velocities. A conduit system has a plurality of upright heatable conduit sections and serves for heating a mash which is produced after the malt has been treated in the crusher, and a clarifying unit is provided for clarifying the mash having been heated previously.

3,834,297
BALE STRAPPING SYSTEM

Gale Huson, Glenview, Ill., assignor to Signode Corporation, Glenview, Ill.

Filed May 15, 1972, Ser. No. 253,125
Int. Cl. B65b *13/04*
U.S. Cl. 100—3 **39 Claims**

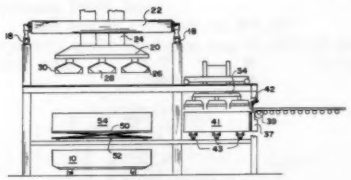
A bale of material such as cotton is held compressed along a vertical axes at a packaging station in a press where a strapping device at one side of the press serially feeds a plurality of straps around the bale at respective strapping locations spaced transversely along the bale sides tensioning each into engagement with the bale and joining each by a seal at one side of the bale. A strap shifting apparatus is mounted at the other side of the packaging station to a transversely movable vertical support. It includes a back-up member horizontally extending to the adjacent bale, and a transversely-extending portion alongside the bale side having a surface thereon facing away from the bale towards the support and which is engaged by a strap when tensioned. Either an arm carrying a wheel at one end and pivoted on the support near the other, or an extendable plunger carried in a cylinder at one end and having a gripping surface at the other end, then moves to compress the strap against the back-up strap surface. In the former, the wheel is then driven to cause the strap to shift, and in the latter, both anvil and plunger are mounted upon a carriage movably carried upon the support, and the carriage is driven vertically along the support to thereby move the strap, and shift the seal from the side to the bottom of the bale. The strap shifting apparatus may then be transversely moved to disengage from the strap and to be repositioned at another strapping location, and the operation repeated.



3,834,298
BRICK UNLOADER-STACKER APPARATUS

Forrest A. Paschal, and Gerald L. Stuart, both of Siler City, N.C., assignors to Forrest Paschal Machinery Company, Siler City, N.C.

Continuation-in-part of Ser. No. 267,251, June 28, 1972, abandoned. This application Aug. 2, 1972, Ser. No. 277,266
Int. Cl. B65b *13/00*
U.S. Cl. 100—7 **21 Claims**



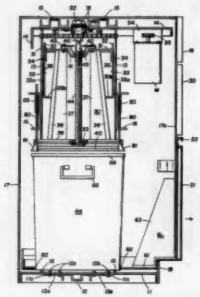
Brick are unloaded from a kiln car one double-layer course at a time and formed into a stack at a receiving station by a combination unloader-stacker head rather than being unloaded by one apparatus and transferred along a conveyor to a stacking apparatus in single or double-layer courses or rows. During the unloading and stacking, a tyne course pickup head is operated synchronously with the unloader-stacker head to form a tyne course at a prescribed position in the stack. The receiving station may be either an elevator operated table or a set of powered conveyor rollers onto which the brick stack is formed. Completed stacks formed by the unloader head are then transferred as a unit to the stacking head.

3,834,299

TRASH COMPACTOR WITH HOLD-DOWN MEANS FOR TRASH CONTAINER AND LINER

Joseph F. Bourgeois, Cedar Rapids, and James M. Grace, Elberon, both of Iowa, assignors to Amana Refrigeration, Inc., Amana, Iowa

Filed Mar. 23, 1973, Ser. No. 344,190
Int. Cl. B30b *15/30*
U.S. Cl. 100—229 A **6 Claims**



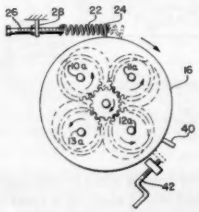
A trash container for use in a trash compactor employs a round bucket in which is placed a disposable plastic bag. A bag liner in the form of a one piece, collapsible sheet of polyurethane is placed around the interior of the bucket over the disposable bag to protect the latter during compaction of trash. In order to prevent trash jammed between the edge of the ram and bag liner from pulling out the latter when the ram of the compactor is withdrawn, a number of spring loaded hold-downs bear against the top edge of the liner and are automatically lifted clear by the ram at the top of its stroke so that the container can be removed.

3,834,300

AUTOMATIC DENSITY CONTROL FOR ROLLING-COMPRESSING MACHINES

Joseph Molitorisz, Bellevue, Wash., assignor to Rotopak Systems Inc., Bellevue, Wash.

Filed Apr. 13, 1972, Ser. No. 243,641
Int. Cl. B30b *3/04, 13/00, 15/30*
U.S. Cl. 100—89 **3 Claims**



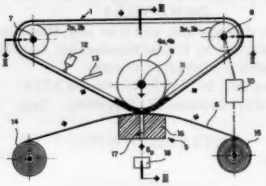
A self-actuating skew-angle control system in which a planetary drive is employed at the driving end of a rolling-compressing channel with the roller ends being mounted in the housing of a planetary gear drive so that an increase in the rolling resistance caused by the increase of material within the channel results in rotation of the gear drive housing to cause skewing of the driven ends of the rollers against a predetermined bias force resulting in the material being moved axially out of the discharge end of the channel.

3,834,301

PROCESS AND DEVICE FOR NON-IMPACT PRINTING WITH LIQUID INK

Jean-Pierre Croquelois, Lausanne; William Erskine, Grand-Lancy/Ge, and Raymond Gerber, Moillesulaz, all of Switzerland, assignors to Battelle Memorial Institute, Carouge, Geneva, Switzerland

Filed Nov. 6, 1972, Ser. No. 304,004
Claims priority, application Switzerland, Nov. 17, 1971, 16767/71
Int. Cl. G01d *5/44*
U.S. Cl. 101—1 **8 Claims**



A process and device are provided for non-impact printing with liquid ink, in which ink dots of controlled size are printed at high speed on paper sheet or strip in accordance with desired printing patterns corresponding to printing control signals delivered by a data source. Electrically conductive ink is retained by capillary action in a plurality of uniform perforations in an electrically conductive ink-carrier provided with an ink-repelling layer. To provide selective ink transfer onto the paper, the ink-carrier is maintained at a given constant potential and the paper sheet is placed between said ink-repelling layer and an array of electrodes which are selectively aligned with perforations of the ink-carrier and receive said printing control signals in the form of voltage pulses of given amplitude and short duration. A localized electric field of controlled intensity and duration is thereby momentarily created between each selected electrode and the ink contained in the perforation in alignment therewith, so as to provide rapid attraction of the ink surface towards the paper for contact therewith. The amount of ink transferred onto the paper during contact may be controlled to provide ink dots of given size by suitable adjustment of the amplitude and duration of the voltage pulses, as well as adjustment of the distance between the paper and the ink at rest in each perforation.

3,834,302

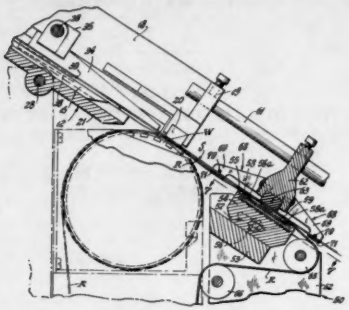
LABEL PRINTING

Peter G. Canaly, 1137 Mill Plain Rd., Fairfield, Colo. 06430

Filed Oct. 20, 1972, Ser. No. 299,434
Int. Cl. B41l *45/02*
U.S. Cl. 101—69 **2 Claims**

There is disclosed a label printing machine having settable type wheels for printing data on a continuous strip of labels with an attachment for striking-in additional data pertaining to a particular succession of labels. The additional data may

comprise the name and address of the party to whom a package containing the labels may be sent while the data



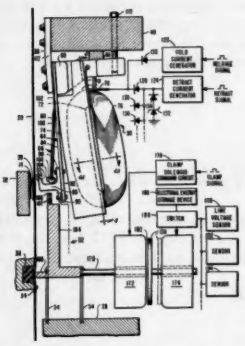
printed on the label by the settable type identifies the contents of the package to which the label is to be applied.

3,834,303

HIGH SPEED LINE PRINTING APPARATUS

Gordon Brent Barrus, El Segundo; Leo Joseph Emenaker, Playa Del Rey, and Raymond Franklin Melissa, Inglewood, all of Calif., assignors to Pertec Corporation, El Segundo, Calif.

Filed Feb. 16, 1973, Ser. No. 333,221
Int. Cl. B41j 5/12
U.S. Cl. 101—93 C **17 Claims**



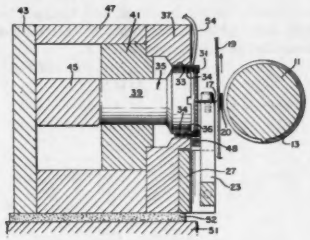
A high speed line printer includes a print-receiving medium, a continuously moving type carrier, a ribbon positioned between the print-receiving medium and the type carrier, and a bank of hammer units having individually fired but simultaneously retracted hammers positioned adjacent the print-receiving medium. Each hammer is magnetically retracted and held against the force of a flat spring armature. Upon release of a hammer, the stored mechanical energy of the spring causes the hammer to be driven to a printing impact and a damper prevents subsequent printing impacts due to hammer oscillation. Each hammer unit comprises a pole piece with a convex pole face and a hammer which includes the flat spring armature secured at one end to the pole piece and an impact element mounted on the outer surface of the armature at the other, free end thereof. The damper has a low mass body which includes energy absorbing material and is spring biased to a normal position in contact with the impact element. The utilization of multiple impacts between the damper and hammer permits the damper mass to be reduced so as to reduce the total movable mass, thereby decreasing hammer flight time and increasing efficiency. An interposer is operable to prevent the printing of an unwanted line by inhibiting the flight of the hammers in the event of an error condition such as a power failure.

3,834,304

HELICAL BAR PRINTER AND HAMMER THEREFOR

John T. Potter, Locust Valley, N.Y., assignor to Potter Instrument Company, Inc., Plainesview, N.Y.

Filed May 21, 1970, Ser. No. 39,314
Int. Cl. B41j 7/08
U.S. Cl. 101—93 C **8 Claims**



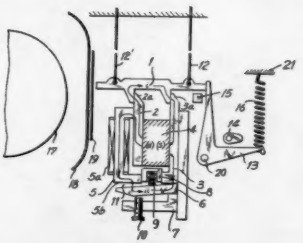
In a printer which selectively prints in response to binary coded input character signals, a plurality of rigidly supported, lightweight blades repeatedly strike a continuously rotating helical bar, printing dot patterns. A movable, lightweight coil fixed to each blade respectively and disposed in a magnetic field drives the blade. Logic circuits, which control the hammers to print alphanumeric characters, include a read only memory which stores binary signal sets representing dot patterns to be printed in rows to compose alphanumeric characters. In response to the received binary characters, addresses in the read only memory are selected to compose the corresponding alphanumeric characters. The binary signal sets at the selected addresses are read out to shift registers, one corresponding to each hammer. The signals in the shift register are read serially out of the shift registers and control actuation of the corresponding hammers as they are read out.

3,834,305

PRINTER

Yoshifumi Gomi, Chino, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Aug. 21, 1973, Ser. No. 390,289
Claims priority, application Japan, Aug. 23, 1972, 47-83641
U.S. Cl. 101—93 C **11 Claims**



A printer is provided with a plurality of print hammers, each of which is maintained in a rest position engaging a deformed elastic body. Individual magnetic circuits in combination with a single permanent magnet are provided for selectively main-

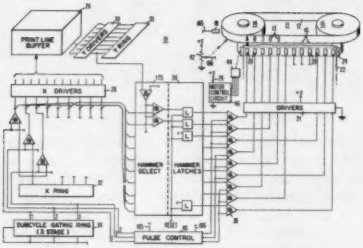
taining each of said print hammers in said rest position and for selectively releasing said print hammers to effect printing. Each magnetic circuit consists of a first portion including a device for adjusting the reluctance of said second portion upon release of the associated print hammer. The first and second portions are connected in parallel with a permanent magnet common to at least two print hammers. Each of said print hammers is released from its rest position by exciting a control coil in said magnetic circuit in a direction such that the magnetomotive force applied to said print hammer to hold said print hammer in position is decreased, the displacement of the print hammer being the product of the release of the energy of the elastic body.

3,834,306

PRINT DENSITY CONTROL

Richard Lyman Gilbert, Endicott, and Michael David Hryck, Endwell, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 26, 1973, Ser. No. 344,666
Int. Cl. B41j *5/22*
U.S. Cl. 101—93 C **6 Claims**



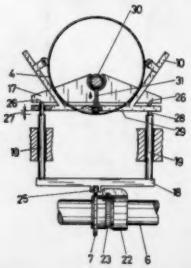
Print hammers in a printer are energized from a source of electrical energy whose voltage may vary. The motor driving the type carrier is energized from an oscillator whose frequency is caused to vary with the voltage of the print hammer source to prevent misregistration between the print hammers and the type characters on the type carrier. The duration of the pulses energizing the print hammers is controlled by print scan pulses derived from timing marks on the type carrier to provide constant print density.

3,834,307

ROTARY SCREEN INTERRUPTER WITH SQUEEGEE LIFT MEANS

Peter Zimmer, Untere Sparchen 54, A-6330 Kufstein, Austria

Filed Sept. 6, 1972, Ser. No. 286,670
Claims priority, application Austria, Sept. 6, 1971, 7722/71
Int. Cl. B41f *15/38*; B41l *13/04*
U.S. Cl. 101—115 **9 Claims**



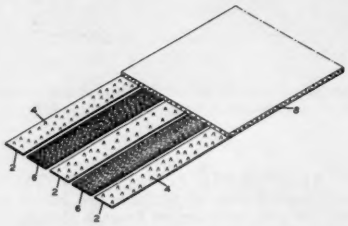
A rotary screen printing machine with a plurality of rotary screens has individual screen lifting devices. Cam shafts have cam plates mounted thereon which raise rams. Each ram has two lifting surfaces. The first lifting surface raises the dye supply and squeegee device within the rotary screen. Then, the second lifting surface raises the rotary screen.

3,834,308

CONDITIONED SLIDE SURFACE FOR CARPET PRINTER

William A. Moggio, Lancaster, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.

Filed Sept. 11, 1972, Ser. No. 287,621
Int. Cl. B41f *1/28, 15/18, 21/08*
U.S. Cl. 101—407 BP **1 Claim**



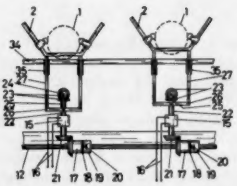
Flat-screen printers for placing a pattern on carpet are provided with a relatively flat stationary surface to support the carpet in place while printing. Herein the normally flat surface of a printer has been replaced by a roughened surface to eliminate the friction and suction drag which is normally encountered when a prewetted foam-back carpet is slid across the flat stationary surface of the printer.

3,834,309

ROTARY SCREEN PRINTER WITH PROGRAMMABLE SCREEN INTERRUPT

Peter Zimmer, Untere Sparchen 54, A-6330 Kufstein, Austria

Filed Sept. 5, 1972, Ser. No. 286,304
Claims priority, application Austria, Sept. 6, 1971, 7721/71
Int. Cl. B41f *15/10*
U.S. Cl. 101—115 **6 Claims**

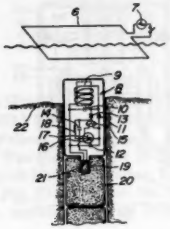


A rotary screen printing machine has a plurality of individual rotary screens each having a lifting device. A control element is connected to each of the lifting devices. A drive is operatively connected to the control element to synchronize the rate of rotation of each of the rotary screens and the lifting thereof by the lifting devices.

3,834,310
REMOTE CONTROL CIRCUIT AND APPARATUS FOR EXPLODING EXPLOSIVES

Takeo Ueda, and Yoshiro Ohsumi, both of Chita-gun, Japan, assignors to Nippon Oils and Fats Company Limited, Chiyoda-Ku, Tokyo, Japan

Filed June 18, 1973, Ser. No. 370,617
Claims priority, application Japan, June 23, 1972, 47-62981
Int. Cl. F42b *3/00*; F42d *3/00*; F42c *13/00*
U.S. Cl. 102—22 2 Claims

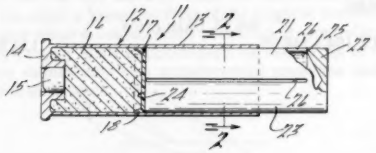


A remote control circuit and apparatus for exploding explosives. Electric power generated at a resonance circuit when it is tuned to a control electromagnetic field is used to charge an ignition condenser. Provision is made for a control circuit including a controlled rectifier called a triac. The control circuit is adapted to generate a starting pulse at an instant when the control electromagnetic field is extinguished. The starting pulse serves to make the controlled rectifier conductive and hence discharge the ignition condenser through a detonator, thereby initiating it and exploding blasting explosives used to break rock and other solid material.

3,834,311
CARTRIDGE

Robert C. Mawhinney, Danville; Edward F. Lamp, Walnut Creek, and Stephen F. Mulich, Jr., San Ramon, all of Calif., assignors to MB Associates, San Ramon, Calif.

Continuation of Ser. No. 148,496, June 1, 1971, abandoned.
This application Dec. 7, 1972, Ser. No. 312,937
Int. Cl. F42b *13/20*
U.S. Cl. 102—41 3 Claims

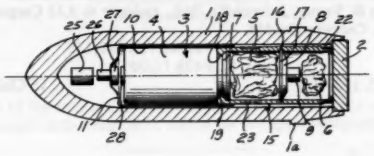


A projectile is effective for a short time and distance and is thereafter rendered ineffective as a result of its rotation in flight. The projectile is mounted in a case of the standard type which permits it to be used in a standard gun. The projectile has a solid head and a hollow extension, the latter of which has longitudinal slots providing a plurality of side wall sections. The sections hinge outwardly from the head, in the position of blades of a propeller, when rotated by the lands in a gun barrel after passing therefrom to quickly reduce the velocity and the striking power of the projectile. By changing the weight at the free end of the side wall sections the time and distance at which the projectile is effective can be changed.

3,834,312
PARACHUTE-BORNE FLARE ASSEMBLAGE

Bjorn Herman Olof Simmons, Karlskoga, Sweden, assignor to Aktiebolaget Bofors, Bofors, Sweden

Continuation-in-part of Ser. No. 341,071, March 14, 1973, , which is a continuation of Ser. No. 101,499, Dec. 28, 1970, abandoned. This application Apr. 27, 1973, Ser. No. 355,057
Int. Cl. F42b *13/38*
U.S. Cl. 102—35.4 7 Claims

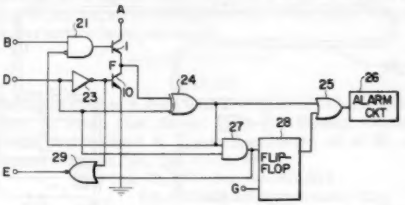


There is disclosed a parachute-borne flare assemblage airlifted by being fired from a rifled gun barrel. This assemblage comprises a hollow projectile which houses the flare package proper. The package includes the flare composition, a main parachute for supporting the flare composition, a drag parachute for reducing the forward velocity and brake flaps for reducing the spin velocity imparted to the projectile when fired and thus also to the flare package and persisting after ejection of the flare package from the projectile. The flare package is ejected as a unit from the projectile by an ejection charge a predetermined time after firing of the projectile, or in other words, when the projectile has reached a selected point in its trajectory. Further ejection and ignition charges free at timed intervals the brake flaps for reducing the spin velocity and the drag chute for reducing the forward velocity of the ejected flare package. Also at timed intervals, components jacketing the package while in the projectile are released and thrown clear by the centrifugal force acting upon these components after ejection from the projectile. Finally, the main parachute unfolds and supports the flare composition which is ignited by an ignition charge, the ignition of which is initiated by the firing of the ejection charge ejecting the flare package as a unit from the projectile.

3,834,313
DETONATOR

Kazuo Sato, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Aichi-ken, Japan

Filed May 9, 1973, Ser. No. 358,517
Claims priority, application Japan, May 10, 1972, 47-45361
Int. Cl. F42c *11/00*
U.S. Cl. 102—70.2 A 7 Claims



In the detonator disclosed, a semiconductor device has its path of major current flow placed in series with a switched power source and a checking apparatus. An explosive adjacent the semiconductor device is set off when the semiconductor device is biased on so it overheats enough to burn out. A checking switch and circuit means test the transistor by

biasing it into its low or normal operating range. A meter indicates the operating condition of the semiconductor device without requiring an initiating current. The semiconductor device may be a transistor, a diode, a thyristor, etc.

3,834,314

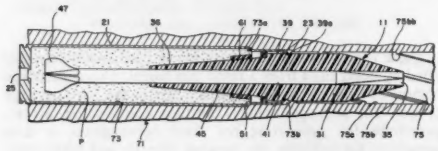
PULLER SABOT AMMUNITION WITH SLIP SEAL

Robert B. Young, Jarretsville, Md., assignor to AAI Corporation, Cockeysville, Md.

Filed Dec. 29, 1972, Ser. No. 319,135

Int. Cl. F42b *31/00*

U.S. Cl. 102—93 **15 Claims**



Discarding sabot ammunition adapted for a rifled barrel, including a cartridge having a finned flechette projectile with a projectile-gripping puller sabot riding within the lands of a rifled barrel and a radially protruding anti-friction annular slip seal engaging and riding in sealing relation with the grooves between the rifling lands.

3,834,315

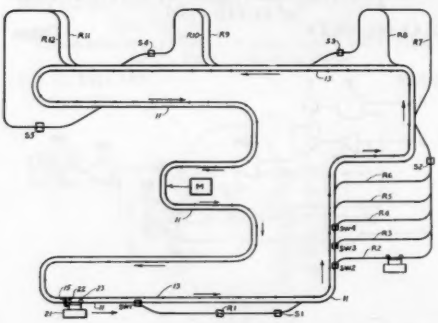
PNEUMATIC CONTROL SYSTEM FOR A TROLLEY DISPATCH NETWORK

Kent F. Warner, White Plains, N.Y., assignor to W & H Conveyor Systems, Inc., Carlstadt, N.J.

Continuation of Ser. No. 133,671, April 13, 1971, abandoned. This application Apr. 6, 1973, Ser. No. 348,506

Int. Cl. B65g *17/42*

U.S. Cl. 104—88 **3 Claims**



A trolley dispatch network in which a penumatic control system is provided to switch trolley carriers from the main rail to various spurs connected to receiving stations.

3,834,316

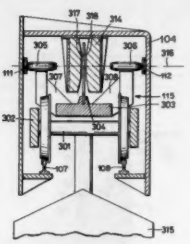
TWO RAIL SUSPENSION RAILWAY WITH A LINEAR MOTOR

Walter Hennings, Kirchen/Sieg, Germany, assignor to Arn. Jung Lokomotivfabrik GmbH, Jungenthal bei Kirchen, Germany

Filed Mar. 9, 1972, Ser. No. 233,150

Int. Cl. B60l *13/00*

U.S. Cl. 104—148 LM **11 Claims**



A suspended carriage railway system having a linear motor. There is provided for such a system fixed supporting means for mounting a spaced pair of tracks. An undercarriage is supported on said track and in turn supports an intermediate frame. One part of linear motor means is mounted on the fixed supporting means and the other part thereof is mounted on the intermediate frame. Said frame is related to the undercarriage for sidewise relative movement with respect thereto but is rigidly guided by lateral rails against sidewise movement with respect to the fixed supporting means. Thus the intermediate frame is held accurately against sidewise movement and the linear motor means mounted on said intermediate frame and the fixed supporting means are held accurately against sidewise movement with respect to each other. This makes possible a minimum spacing of the linear motor components while permitting the undercarriage structure to move sidewardly in response to clearance between the supporting wheels and the rails. The railway carriages are suspended from the undercarriage means.

3,834,317

MAGNETIC MOVING VEHICLE SUSPENSION

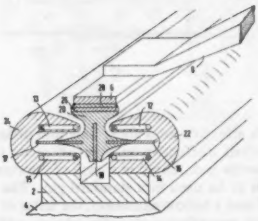
Jurgen Miericke, Nurnberg, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Dec. 4, 1972, Ser. No. 311,566

Claims priority, application Germany, Dec. 7, 1971, 2160680

Int. Cl. B61b *13/08*

U.S. Cl. 104—148 SS **12 Claims**



A magnetic moving vehicle suspension has at least two null-flux systems arranged to provide vertical suspension and resistance to rolling of the vehicle, the electric current-carrying magnet loops of these two systems being positioned to

cooperatively form a common flux field in a vertical plane between them, and the trackway, in addition to the horizontal electrically conducting track loops of non-magnetic material of these two systems, further including vertical electrically conducting track loops of non-magnetic material cooperating with this common flux field to form a third null-flux system providing resistance to transverse horizontal motion of the vehicle. The magnet loops may be formed by superconductors and the trackway loops may comprise plates made of electrically conductive non-magnetic material, preferably made of several layers of this material laminated together.

3,834,318

GROUND TRANSPORTATION SYSTEMS AND TRACKS AND VEHICLES THEREFOR

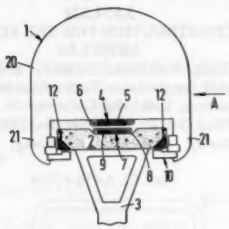
Thomas George Fellows, Barnet, and Richard John Armstrong, Bevan, Waterbeach, both of England, assignors to Tracked Hovercraft Limited, London, England

Filed Jan. 23, 1973, Ser. No. 326,030

Claims priority, application Great Britain, Jan. 24, 1972, 3332/72

Int. Cl. B61b *13/04, 13/08*

U.S. Cl. 104—148 MS **18 Claims**



In a ground transportation system comprising a prepared track and a vehicle adapted for operation along the track, the vehicle has first and second electromagnets spaced laterally apart on the vehicle. The track has two lengths of magnetic material extending along the track and arranged so as in combination with the core of each electromagnet to provide a transverse low reluctance path for magnetic flux. Of the two air gaps in each flux path, one is formed by faces of the magnetic material and the core which are substantially vertical and the other is formed by faces of the magnetic material and the core which are substantially horizontal. By controlling the electric supply to the electromagnets the vehicle can be maintained substantially at a predetermined transverse position relative to the track.

3,834,319

CONVEYOR INSTALLATION WITH TRANSPORT CONTAINERS

Werner Kastenbein, Zurich, Switzerland, assignor to Hans Ingold & Co., Zollikon, Switzerland

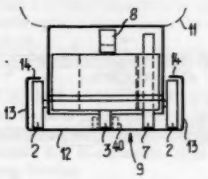
Filed Jan. 10, 1973, Ser. No. 322,363

Claims priority, application Switzerland, Jan. 14, 1972, 493/72

Int. Cl. B61f *13/00*

U.S. Cl. 104—246 **13 Claims**

A conveyor installation with transport containers guided at a rail and each of which can be propelled by means of its own drive unit. Each of the transport containers is supported at the associated rail through the agency of a respective pair of travelling wheels arranged in the direction of the transverse



axis of the transport container and by means of guide wheels arranged in the lengthwise axis of the transport container.

3,834,320

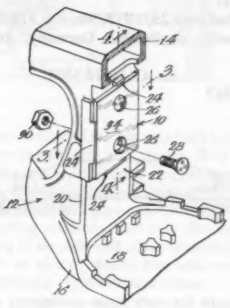
SPRUNG MOUNTED SNUBBER WEAR PLATE

Carl E. Tack, Elmhurst, Ill., assignor to Trans Dyne, Inc., Chicago, Ill.

Filed Jan. 5, 1973, Ser. No. 321,131

Int. Cl. B61f *5/12, 5/50;* **F16d** *69/04*

U.S. Cl. 105—197 D **7 Claims**



A sprung wear plate particularly useful for reliable secure application to the side frame columns of a railway truck is made from a single metal strip having a concave surface facing the flat mounting surface on the side frame column. The plate has holes for attachment by bolts through aligned holes in the column. High strength bolts are used such that tightening of the bolts flattens out the concave surface of plate into full contact with the column locking the bolts therein. The bolts preferably have tapered heads received in tapered holes in the plates to prevent accidental application of the plates with the concave surface facing outwardly.

3,834,321

CUSHIONED RACK FOR CONTAINERS ON FLATCARS

Robert A. Pratt, Oak Brook; Keith W. Broling, Olympia Fields, and Richard A. Tatina, La Grange, all of Ill., assignors to Portec, Inc., Oak Brook, Ill.

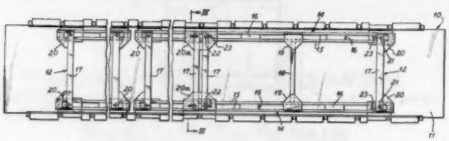
Filed Oct. 18, 1973, Ser. No. 407,412

Int. Cl. B65j *1/24*

U.S. Cl. 105—366 A **9 Claims**

Cushioned container support for supporting containers on flatcars. The support includes a rack for one long container or two shorter containers having bolsters extending across the rack at each end of the rack and intermediate the ends of the rack. Each bolster has twist locks at its opposite ends for locking the container to the car. The twist locks intermediate the ends of the rack are retractable to accommodate a longer container to be supported on the rack and on the end bolsters.

The rack and bolsters are supported on elastomeric shear pads bolted to the floor of the car between guides for the rack. The bolsters have parallel depending friction members spaced inwardly of the guide members. The friction members form side



beams and a retarding means for the rack and the shear pads are disposed between the friction members. During elongation of the elastomeric shear pads upon heavy impact stresses, the friction members are pulled down and frictionally engage the guides to slow down maximum travel of the bolsters and rack.

3,834,322

MIXER TYPE CAR FOR TRANSPORTING MOLTEN PIG IRON

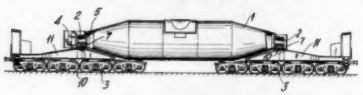
Gunter Meier, Weseler Str. 17, Oberhausen, Germany (42); Winfried Laubach, Nansen Str. 14, Gelsenkirchen, Germany (465), and Josef Horstmann, Oskar Str. 82, Oberhausen, Germany (42)

Filed June 25, 1973, Ser. No. 373,037

Claims priority, application Germany, June 26, 1972, 2231180

Int. Cl. B61d *5/04*

U.S. Cl. 105—367 **8 Claims**



A car structure for very large containers such as mixing tanks for transporting molten pig iron comprises a long tank having a cylindrical trunnion at each end which are supported on bearings on a wheel carriage. At least one of the bearings includes a first bearing part which is secured to a bridge support of the undercarriage and has a top spherical support surface which rotatably receives a similar spherical bottom surface of a second lower bearing part. The lower bearing part includes an opened top bearing support surface for rotatably receiving the trunnions of the large tank and it is closed by a bearing cover part. A tilt drive is carried by the trunnions and it includes a drive member having a driving pinion which meshes with a large gear carried on the trunnion shaft. The tilt drive engages against the outer end of the associated second lower bearing part and it includes a torque stay member which is engaged into a receiving member carried on the lower bearing part. The lower bearing part is anchored in position on the bridge member by a centrally disposed king pin.

3,834,323

DRUM PALLET

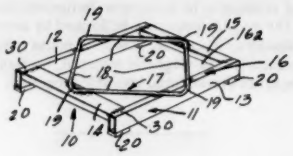
Carl E. Weinmann, Lake City, Minn., assignor to Valley Craft Products, Inc., Lake City, Minn.

Filed Sept. 15, 1972, Ser. No. 289,448

Int. Cl. B65d *19/00*

U.S. Cl. 108—51 **8 Claims**

A drum pallet, such as of steel, includes a shallow metal rectangular base or base portion, a loop of metal receptive in the bottom rim of a drum, such loop being secured to the upper side of said base and overhanging the longer sides thereof, there being one to four such loops on each base, a set



of cleats on the bottom of the base receptive of the top rim or rims of another drum or drums on which the pallet is stacked, such structure enabling the use of a hand truck to load a filled drum directly onto the pallet.

3,834,324

RACK CONSTRUCTION FOR THE STORAGE OF ARTICLES

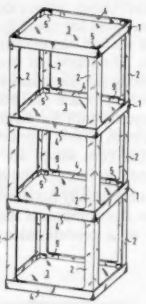
Franz Josef Lang, Kelkheim, Germany, assignor to Display-Design GmbH fur moderne Verkaufsforderungs-mittel und Raumausstattung, Kelkheim, Germany

Filed Oct. 19, 1972, Ser. No. 298,955

Claims priority, application Germany, Oct. 27, 1971, 2153603

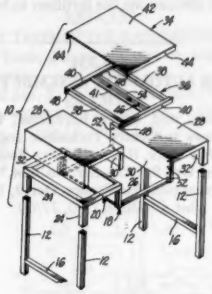
Int. Cl. A47b *47/04*

U.S. Cl. 108—91 **8 Claims**



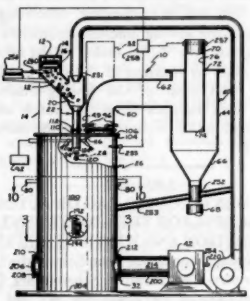
The present invention relates to a rack construction assembly for the storage of articles. The rack construction comprises several base plates which are held one above the other by means of supporting elements to be assembled with the base plates. In the region of the junction points of base plates and supporting elements there are provided locking elements which lock in when the base plates are connected with the supporting elements, thus securing the single parts of the rack construction against unintentional disengagement. This rack construction can be assembled and disassembled quickly and without any tools and offers all-over access to pick up articles.

3,834,325
TABLE
Ralph J. DeWilde, 718 Calspur, Claremont, Calif. 91711
Filed Oct. 24, 1972, Ser. No. 299,687
Int. Cl. A47b 21/02
U.S. Cl. 108—96 3 Claims



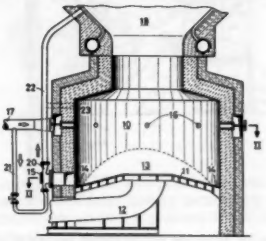
A table having a top with an adjustable panel whch may be raised and lowered relative to the remainder of the top to provide a work surface whose elevation above the floor may be adjusted. The table is designed for use primarily by wheel chair patients.

3,834,326
LOW POLLUTION INCINERATION OF SOLID WASTE
Norman K. Sowards, Moore, Idaho, assignor to Environmental Products, Inc., Idaho Falls, Idaho
Filed Apr. 26, 1973, Ser. No. 354,812
Int. Cl. F23g 5/00
U.S. Cl. 110—8 R 2 Claims



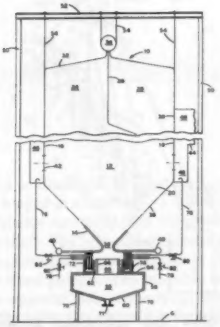
An incinerator system and method wherein pieces of solid waste, such as fragments of wood, are conveyed to an influent vertical feed tube where an air jet pump injects them into an incinerating chamber or vessel and at the same time providing influent air for aiding combustion of volatile matter. The falling waste particles are horizontally distributed by striking a cone shaped spreader and secondary air directed horizontally and radially from the spreader may or may not be used to aid in the particle distribution. The particles are "pre-dried" as they pass through the high temperature vapor space before reaching a fluidized bed. A fluidized bed, situated immediately above an air delivery chamber at the bottom of the vessel, supports combustion of the solid wastes in the top layer of fine granular material. The top layer is supported by coarse stone and a perforated plate with cover caps in that order. The air delivery system channels high temperature air into the fluidized bed until operating temperature is reached and so channels ambient air thereafter. Volatile matter given off by combustion of the solid waste in the fluidized bed is burned smokelessly in the vapor space immediately above the bed. The temperature of the vapor space and the bed are set by one or more controlled water spray nozzles. The vessel exhaust is processed through a cyclone separator to remove small particles. A fog nozzle spray system cools the exhaust before it reaches the cyclone.

3,834,327
CYCLONE FURNACE HAVING ASH REMOVAL MEANS
Bengt Hellstrom, Goteborg; Ulf Karsberg, Saffle, and Ingmar Astrom, Stenungsund, all of Sweden, assignors to Gotaverkens Angtekniska AB (Gotaverken Heat Engineering Co. Ltd.), Goteborg, Sweden
Filed Apr. 18, 1973, Ser. No. 352,304
Claims priority, application Sweden, June 14, 1972, 007803/72
Int. Cl. F23g 7/00
U.S. Cl. 110—18 R 4 Claims



In cyclone furnaces used for burning bark and similar wood refuse, the removal of ash and cinder involves a delicate problem because the combustion residues are easily fused when subjected to elevated temperature. The commonly used openings in a grate covering an ash pit is not satisfactory to remove the rotating products, and it is now proposed to arrange an opening in the side wall of the cyclone, just above the grate, and to fit an ejector means into said opening for continuously removing the combustion residues.

3,834,328
FURNACE SEAL
Andrew J. Blazewicz, Barberton; Edward J. Piaskowski, Massillon, and James F. Wood, Stow, all of Ohio, assignors to The Babcock & Wilcox Company, New York, N.Y.
Filed July 11, 1973, Ser. No. 378,293
Int. Cl. F23j 1/00
U.S. Cl. 110—165 R 10 Claims



An improved furnace seal comprising a plurality of laterally spaced endless skirts immersed in a liquid trough and includ-

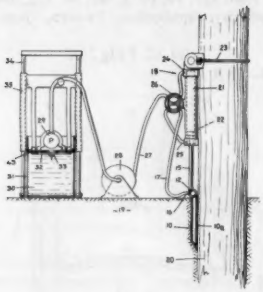
ing means for supplying a gaseous medium to the spacing between skirts.

3,834,329

APPARATUS FOR APPLYING PRESERVATIVE MATERIAL TO ERECTED POLES AND THE LIKE

John W. Suggitt, 11 Farningham, Islington, Ontario, and Walter V. Inkis, 86 Oxford St., Kitchener, Ontario, both of Canada

Filed Sept. 2, 1971, Ser. No. 177,218
Int. Cl. A01c *23/02*; B27k *3/02*
U.S. Cl. 111—6 **4 Claims**



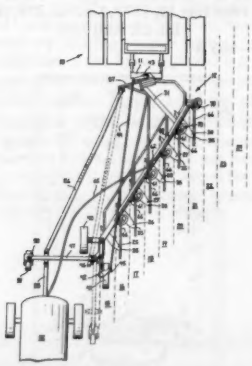
An apparatus for applying preservative grease to an erected utility pole or the like comprises an injection tool in the form of a spade adapted to be driven into the ground, the spade providing internal passageways opening into the concave operative face of the spade. The spade is actuated by a hydraulic ram, powered by the preservative material under pressure, the ram serving also as a metering device for regulating the quantities of material injected in accordance with the vertical movements of the spade.

3,834,330

COMBINED PLOW AND FERTILIZER DISPENSER

Roy H. Wallace, Chalmers, Ind.

Continuation-in-part of Ser. No. 702,296, Feb. 1, 1968, abandoned. This application Oct. 15, 1970, Ser. No. 80,955
Int. Cl. A01c *23/02*
U.S. Cl. 111—7 **7 Claims**



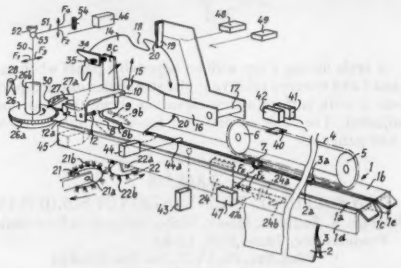
A combined plow and anhydrous ammonia fertilizer dispenser wherein the ammonia tank is connected to the plow so as to be drawn over unplowed ground. Hose means lead from the tank to the individual plow blades and dispense fertilizer beneath the soil being turned over in the furrows. The hoses are held in position by novel wear-reducing clamps. A further embodiment combines a chisel plow and fertilizer dispenser. The plow blades have hoses mounted thereon by clamps. Some of the plow blades which are located rearwardly of other plow blades push the dirt into the furrows cut by the forwardly located plow blades and also cover the exhaust end of the hoses with dirt causing the fertilizer to be retained in the soil.

3,834,331

MACHINE FOR AUTOMATIC ASSEMBLY OF KNITTED ARTICLES

Jean-Pierre Raisin, and Andre Bernardot, both of Troyes, France, assignors to Centre Technique Industriel dite: Institut Textile De France, Hauts-de-Seine-Boulogne, France

Filed Oct. 9, 1973, Ser. No. 404,759
Claims priority, application France, Oct. 9, 1972, 72.35749
Int. Cl. D05b *7/00, 27/00*
U.S. Cl. 112—27 **23 Claims**



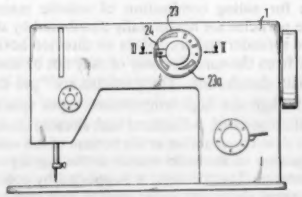
A machine for automatically assembling knitted articles has a guideway to direct the selvedges of articles towards a sewing machine where they will be connected. A selvedge unrolling device upstream of the sewing machine comprises a disc having notches which receive "tailor-tacks" of the selvedge edges and are swung aside by rotation of the disc to lift the tailor tacks upwardly well clear of the sewing machine needle whereupon the tack escapes from the notch and the disc rotates until a fresh notch is presented to the selvedges to be stitched together.

3,834,332

ARRANGEMENT ON A ZIG-ZAG OR AUTOMATIC SEWING MACHINE FOR THE ADJUSTMENT OF THE STITCH POSITION AND WIDTH OF THE STITCH

Gunther Max Gude, Rannungen near Schweinfuri, Germany, assignor to Meister-Werke GmbH, Schweinfurt, Germany

Filed June 28, 1972, Ser. No. 267,109
Claims priority, application Germany, June 28, 1971, 2132064
Int. Cl. D05b *3/02*
U.S. Cl. 112—158 A **8 Claims**



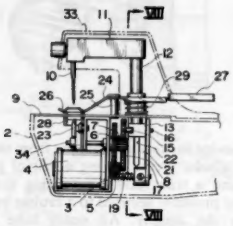
An adjustment device for use on a zig-zag or automatic sewing machine for adjusting the stitching field, wherein the ad-

justing elements for the stitch position and width of the stitch have a common turnable unit, and a single manual adjusting means is provided for the simultaneous adjustment of the adjusting elements for the adjustment according to choice of all kinds of stitch positions and widths of stitches.

3,834,333
ELECTROMOTIVE HAND SEWER

Tsuneo Seyama, Yono, Japan, assignor to Aidearu Kiki Co., Ltd., Tokyo, Japan

Filed Jan. 3, 1973, Ser. No. 320,755
Claims priority, application Japan, Feb. 7, 1972, 47-15638
Int. Cl. D05b *1/00*
U.S. Cl. 112—169 **2 Claims**



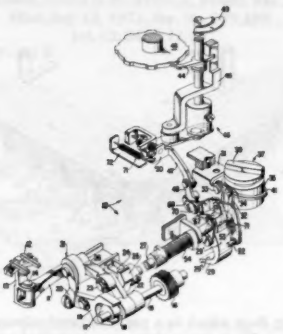
This invention relates to a hand sewer which is actuated by a motor with dry cells or household electricity and is worked by a single hand. The hand sewer comprises a box and a handle as one body. The handle accommodates dry cells or a converter for using household electricity and has a switch button which can be easily pushed by a forefinger. The box is covered with a needle plate and accommodates a motor, a transmission gearing, a reciprocating means, a looping means and a feeding means. A reciprocating rod of the reciprocating means pierces out through the needle plate from the inside of the box and has an arm fixed to the upper end. The arm has a needle attached to the tip. The needle plate has a sewing hole and a pair of parallel slots for a feed dog and is provided with a lever plate comprising a presser foot and a presser lifter. By driving the motor, the transmission gearing actuates harmonically the needle, the looper and the feed dog.

3,834,334
WORK FEED CONTROL MECHANISM

Kenneth D. Adams, Madison, and William L. Herron, Elizabeth, both of N.J., assignors to The Singer Company, New York, N.Y.

Filed June 14, 1973, Ser. No. 370,074
Int. Cl. D05b *27/02*
U.S. Cl. 112—210 **7 Claims**

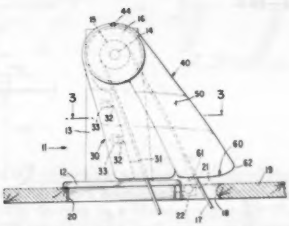
A stitch length and cam feed mode ratio control mechanism for the work feed regulating system of a sewing machine that includes a feed regulator shaft rotatably mounted in the frame of the machine operably connected to a feed dog and adapted to influence movement imparted thereto so as to cause same to transport work transversely across the work supporting bed of the machine by predetermined incremental distances. A feed regulator lever arm is secured to the regulator shaft. A floating link member is carried at one end thereof by an element associated with the cam feed linkage system and is provided at its other end with a pin positionable along said feed regulator lever arm and engageable therewith. Manually operable means are provided for guiding said pin along the feed regulator lever arm for stitch length selection and for simultaneously establishing the proportionate amount of motion transmitted from the feed cam to the regulator shaft, the radius of curvature of the feed regulator lever arm and path of movement of said pin being such as to enable the positioning of the pin along the lever without effecting angular movement of the said lever arm when a portion of the cam is being tracked which dictates a zero stitch length. The cam, while in any position other than the zero position, causes the pin to be urged against the said lever arm so as to rotate same and the regulator shaft by an amount representative of the radial location of the pin along the lever.



3,834,335
BELT GUARD FOR SEWING MACHINES

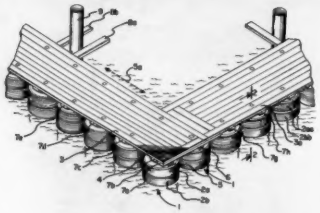
George D. La Police, Somerville, and Charles R. Odermann, Lake Valhalla, both of N.J., assignors to The Singer Company, New York, N.Y.

Filed Nov. 8, 1973, Ser. No. 414,014
Int. Cl. D05b *83/00*
U.S. Cl. 112—261 **3 Claims**



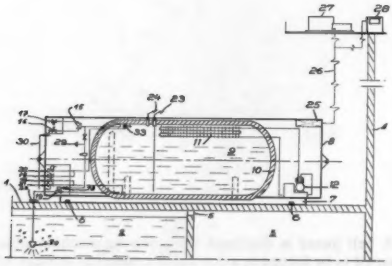
A belt guard is disclosed for a sewing machine which is adapted to be hinged in a cut-out in a table top through which a drive belt extends upwardly to a belt pulley on the sewing machine main shaft. The belt guard includes a portion fixed to the sewing machine frame and a movable portion pivoted at the top to the fixed portion. The movable belt guard portion extends to the opposite side of the hinge between the sewing machine and the table top where it is formed with a cam surface which slides along the table top when the sewing machine is turned upwardly to influence a separation of the belt guard portions so as to provide access for inspection and replacement of the drive belt.

3,834,336
FLOATING SPACE FRAME
Donald E. Peters, 81 Rustic Pl., Staten Island, N.Y. 10308
Filed May 21, 1971, Ser. No. 145,773
Int. Cl. B63b 35/00
U.S. Cl. 114—.5 F 7 Claims



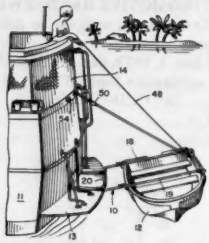
A durable float which in a preferred embodiment includes polyurethane filled automobile tires including an attaching rod extending through the center of each polyurethane mass through the center of each tire, with the plurality of the polyurethane filled tires joined between their respective bases and joined between their respective top surfaces with any desired deck structure mounted on top of the joining-structures, each polyurethane-filled-tire unit being spaced from other units at predetermined intervals sufficient to avoid collection of floating debris, to give the desired live load.

3,834,337
SUBMARINE RESERVOIRS
Claude R. Bremaud, Merignac, France, assignor to Societe anonyme dite: Societe Europeenne De Propulsion, Puteaux, France
Filed Feb. 22, 1973, Ser. No. 334,630
Claims priority, application France, Apr. 19, 1972, 72.13823
Int. Cl. B63g 8/22
U.S. Cl. 114—16 E 7 Claims



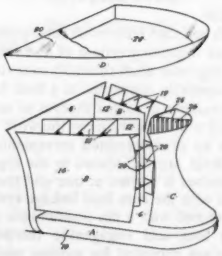
Submarine reservoirs of large dimensions, of the type designed to be towed to the desired location for installation on the seabed, are immersed by drawing compensatory gas stored in the liquid state in an auxiliary enclosure associated with the reservoir, whereby the reservoir is submerged and when located the auxiliary enclosure can be detached from the installed submarine reservoir.

3,834,338
DINGHY LIFTING DEVICE
William Renouf, Kenilworth, Ill., assignor to N. S. Stephens Company, Inc., Northbrook, Ill.
Filed May 16, 1973, Ser. No. 360,626
Int. Cl. B63b 35/72, 23/04
U.S. Cl. 114—43.5 11 Claims



A lifting device for raising a dinghy from the water includes a U-shaped tubular frame having a pair of generally parallel side tubes and a transversely extending end tube which is adapted to be pivotally secured to a cruiser or other mounting member for the dinghy. An outer tube is telescopingly received in each of the side tubes, and the side tubes and outer tubes are adapted to lie athwart the gunwales of the dinghy. Abutment means are mounted on each of the side tubes and each of the outer tubes, and over-center latch means connected to each of the side tubes and outer tubes permit the outer tubes to be telescopingly retracted to clamp the gunwales of the dinghy between the abutment means. A cleat is mounted on the abutment means on each of the side tubes, and a line can be passed around the dinghy and secured to the cleat if desired. The frame can be pivoted upwardly about its pivotal attachment to the cruiser to raise the dinghy from the water, and a latch secured to a cross member extending between the outer ends of the outer tubes can secure the outer tubes to the cruiser.

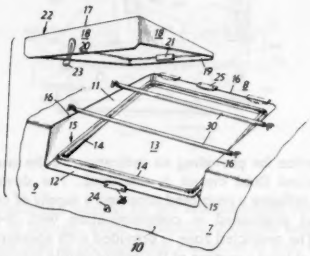
3,834,339
CONSTRUCTION OF SHIPS
Robert Rutherford, North Shields, England, assignor to Swan Hunter Group Limited, Wallsend, Northumberland, England
Filed Oct. 16, 1972, Ser. No. 297,629
Claims priority, application Great Britain, Oct. 21, 1971, 48990/71
Int. Cl. B63b 3/02
U.S. Cl. 114—77 R 6 Claims



A fore end structure for a ship, and method of constructing same, consisting of a number of prefabricated units adapted to be assembled to form said fore end, the port and starboard of

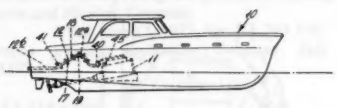
said units being of an orthogonal nature in that the webs interconnecting the sideshell portion and associated bulkhead of said units extend normally to the waterline of the ship, thereby to improve the efficiency of the sideshell stiffening.

3,834,340
MARINE CRAFT
David C. Thorpe, London, England, assignor to Richmond Marine Limited, London, England
Continuation-in-part of Ser. No. 887,295, Dec. 22, 1969, Pat. No. 3,674,170. This application Apr. 20, 1972, Ser. No. 245,896
Claims priority, application Great Britain, Jan. 23, 1969, 4029/69The portion of the term of this patent subsequent to July 4, 1989, has been disclaimed.
Int. Cl. B63b *19/14*
U.S. Cl. 114—201 R **23 Claims**



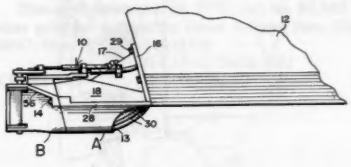
A marine craft hull having an opening in which a storage container can be located, said container comprising a bin the upper edge of which is provided with an outwardly projecting flange, a cover which extends over the bin and engages the flange and means for rigidly securing the cover in position on the boat hull.

3,834,341
FLUID-COOLED ENGINE EXHAUST SYSTEM
Peter R. L. Sexton, Philadelphia, Pa., and Samuel H. Tibbetts, III, Rockport, Maine, assignors to Maine Technical Industries Incorporated, Rockport, Maine
Filed May 18, 1972, Ser. No. 254,716
Int. Cl. B63j *5/00*
U.S. Cl. 115—.5 R **13 Claims**



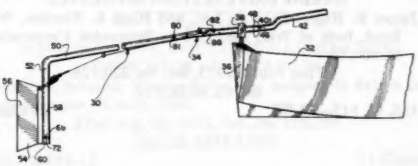
In a water-cooled engine exhaust system for boats having inboard engines wherein exhaust gases from the engine are vented through a shaped conduit, couplings are provided to enable the conduit to be fabricated from a series of straight and curved sections. The sections are composed of coaxial pipes of different diameters which cooperate to provide a central flow passage for exhaust gases and an annular flow passage for the cooling fluid. Each coupling comprises complementary elements which are mounted on the ends of the sections and which are fastened together by means of band clamps. Each element is internally constructed to provide fluid communication between the central and annular passages in adjacent conduit-sections. Special transition coupling members are also provided for the ends of the conduit to supply cooling water to and to remove cooling water from the annular passage.

3,834,342
WATER JET PROPULSION DEVICE
Harry L. Schoell, 19611 N.W. 39th Ct., Miami, Fla. 33054
Filed July 13, 1973, Ser. No. 379,198
Int. Cl. B63h *11/10*
U.S. Cl. 115—12 R **6 Claims**



A water jet propulsion device for propelling boats and the like having a housing whose inlet, water passageways and outlets are in substantially a horizontal plane with water deflecting shoulders extending horizontally on each side of the housing whereby the device is only partially submerged in the water when in operation to reduce its resistance to the flow of water. A vertical wall in the housing divides the flow of water into two streams that impinge on water deflector members mounted at the outlet in order to steer the boat or cause it to move backwardly.

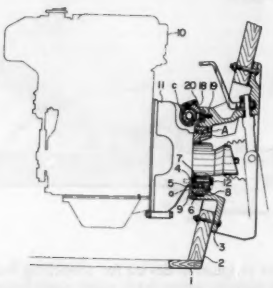
3,834,343
ARTICULATED SCULLING OAR
Walter M. Hopkins, 1306 W. Glenoaks Blvd., Glendale, Calif.
Filed Nov. 14, 1972, Ser. No. 306,489
Int. Cl. B63h *16/04*
U.S. Cl. 115—28 R **9 Claims**



Disclosed is a collapsible sculling oar designed for universal pivotal attachment to a boat, especially small watercraft, to impart motion thereto in a manner generally known as "sculling." The oar includes a shaft portion extending generally horizontally over the boat, an adjustable handle removably mounted at one end of the shaft, and at least one adjustable blade-supporting arm removably mounted at the other end of the shaft and depending substantially vertically therefrom into the water, in spaced relation from the boat. The blade is arranged to move back and forth on the supporting arm through a predetermined arc of movement, a depressible protrusion being arranged on the arm to limit movement of the blades relative thereto and to permit displacement of the blade from one position to another for opposed sculling movement. A lever-operated locking mechanism is provided to halt movement of the blade on the arm and to lock the former into a predetermined position such as to constitute a ruddering effect of the blade.

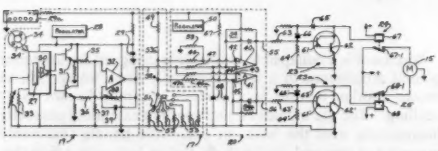
Dual blade embodiments are likewise disclosed.

3,834,344
APPARATUS FOR MOUNTING A MARINE ENGINE
Takao Yoshino, Tokyo, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan
Filed Dec. 29, 1972, Ser. No. 319,675
Claims priority, application Japan, Dec. 29, 1971, 46-3451
Int. Cl. B63h 5/00
U.S. Cl. 115—34 R 3 Claims



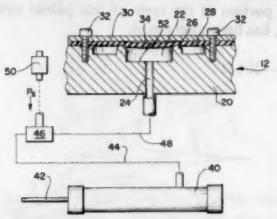
An apparatus for mounting a marine engine which has a transom mounted to a stern and having a circular hole formed at the center thereof, main mounting means having an inner cylinder connected to the engine, an outer cylinder connected to the transom, and a rubber member press-fitted in wedge fashion into the gap formed between the inner and outer cylinders for absorbing the engine vibration and a bush type mounting means having an inner cylinder connected to the flywheel housing of the engine, an outer cylinder connected to the transom, and vulcanized rubber member between the inner and outer cylinders for absorbing the engine vibration, and O-rings provided at the inside of the inner cylinder and at the outside of the outer cylinder for preventing water from entering into the engine.

3,834,345
MARINE DRIVE SETTING APPARATUS
James R. Hager, Fond du Lac, and Hugh E. Riordan, West Bend, both of Wis., assignors to Brunswick Corporation, Skokie, Ill.
Filed Feb. 5, 1973, Ser. No. 329,726
Int. Cl. B63h 5/12
U.S. Cl. 115—41 HT 29 Claims



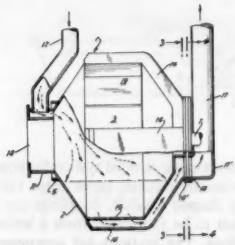
Apparatus for power positioning and holding of an outboard marine drive includes a manual trim angle selection input signal generator. A position sensitive signal generator in the form of a Hall cell or a resistor is secured on the gimbal ring unit with a movable element set in accordance with and by the movment of the marine drive. A comparator provides a pair of output signals in accordance with the relative magnitude of the two signals and depending upon whether drive is to be raised or lowered. The output signals are similarly connected through amplifying and switch isolating circuitry to actuate an electric motor and hydraulic pump unit to raise or lower the stern drive unit the position sensor and the manual input are nulled. A slight dead band maintains stable operation as the stern drive is moved to a new trim position. A fail-safe circuit prevents malfunctioning if the sensing system open circuits.

3,834,346
FLUID CIRCUIT INDICATOR
Larry Clyde Cowan, Saunderstown, R.I., assignor to Leesona Corporation, Warwick, R.I.
Filed Sept. 15, 1972, Ser. No. 289,578
Int. Cl. G01l 19/12
U.S. Cl. 116—70 9 Claims



A device for providing an indication of the condition of a pressurized fluid circuit is disclosed. The device includes means defining a restricted zone and a supply of compressible material positioned in communication with the restricted zone. The restricted zone is provided with aperture means exposing at least a portion of the compressible material for visual inspection. Fluid inlet means are connected with a fluid circuit and operate to admit pressurized fluid to the restricted zone, in consequence of which the compressible material is compressed. The contrasting relaxed and compressed conditions of the compressible material afford visual indications of the condition of the fluid circuit.

3,834,347
TABLET COATING APPARATUS
Shimesu Motoyama, and Shuri Yamada, both of Tokyo, Japan, assignors to Freund Ind. Co., Ltd., Tokyo, Japan
Continuation of Ser. No. 261,934, June 12, 1972, abandoned.
This application Feb. 11, 1974, Ser. No. 441,730
Claims priority, application Japan, June 16, 1971, 46-43554
Int. Cl. B05c 3/08
U.S. Cl. 118—19 1 Claim



An apparatus for applying pharmaceutic tablets or the like with coat of other material such as sugar or the like is provided. The apparatus comprises a single drum supported for rotation and having a plurality of discrete perforation areas discretely provided along the cylindrical wall of the drum. These perforated areas are air-tightly covered by respective suction ducts which are adapted to be communicated with a

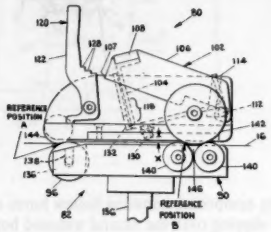
stationary exhaust conduit disposed at one side of the drum every time when the corresponding perforated area comes to a predetermined angular position during the rotation of the drum. The supply of air to dry the coating of tablets is carried out by way of a supply conduit which is disposed at the other side of said drum and opens therein.

3,834,348

PRINTING SCREEN COATING APPARATUS

James A. Black, 13700 Sparta N. W., Kent City, Mich. 49330

Filed June 1, 1972, Ser. No. 258,856
Int. Cl. B05c *5/02*
U.S. Cl. 118—323 **36 Claims**



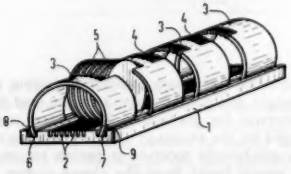
An apparatus and method for the automatic and controlled application of smooth, even, controlled thickness coatings of viscous fluids such as photographic emulsions to taut, flexible, suspended layers of materials such as silk printing screens. The apparatus employs an adjustable frame for supporting various sizes of materials to be coated in unique cooperation with special spreading means for evenly spreading viscous fluids on the screen as motive power means moves the spreading means at a controlled, predetermined rate. Preferably, curing means is supplied for drying or baking the fluid on the screen. The spreading means includes a tray for holding and spreading the fluid and a base for movably supporting the tray over the screen to be coated without direct, physical contact therewith. The tray moves in unison with the base by a unique arrangement employing magnetic attraction.

3,834,349

DEVICE FOR HOLDING SEMICONDUCTOR DISCS DURING HIGH TEMPERATURE TREATMENT

Wolfgang Dietze; Reimer Emeis; Wolfgang Keller; Alfred Muehlbauer, all of Munich, and Konrad Reuschel, Vaterstetten, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed June 12, 1972, Ser. No. 261,945
Claims priority, application Germany, July 7, 1971, 2133877
Int. Cl. B05c *11/14*
U.S. Cl. 118—500 **6 Claims**



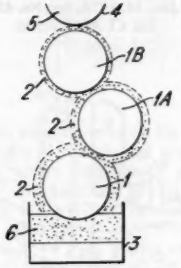
A device for holding semiconductor discs during high temperature treatment, such as the diffusion of impurities therein, consisting of a base plate having grooves extending therealong, and a plurality of spaced holders supported by the base plate, the holders having slots therein which are vertically aligned with the grooves in the base plate so that a semiconductor disc positioned with its edge in one of the grooves will be supported by the slots in the holder at a position at or above its center of gravity to prevent bending of the discs during high temperature treatment.

3,834,350

ELECTROGRAPHIC APPARATUS FOR MAGNETIC PRINTING

Robert James Hodges, Cheshunt, England, assignor to Standard Telephones and Cables Limited, London, England

Continuation of Ser. No. 770,691, Oct. 25, 1968, abandoned. This application Oct. 28, 1970, Ser. No. 84,947
Claims priority, application Great Britain, Nov. 23, 1967, 53328/67; Mar. 8, 1968, 11415/68
Int. Cl. G01d *15/12*; **B05b** *3/02*
U.S. Cl. 118—637 **1 Claim**



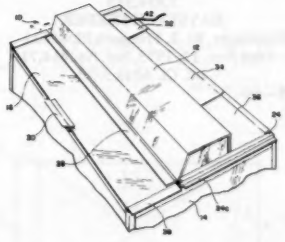
Electrographic apparatus wherein a rotatable surface is interposed between the recording surface of the apparatus and means is provided for applying printing powder to the rotatable surface, the rotatable surface providing the means to develop a latent image on the recording surface. The thickness of the layer of printing powder is regulated by a plurality of magnetic drums spaced apart from one another by an amount which decreases near to the recording surface.

3,834,351

NON-CORROSIVE, INSULATED ILLUMINATION DEVICE FOR AN AQUARIUM

Walter E. Schmidt, Winter Park, Fla., assignor to Petcoa Industries, Inc., Toledo, Ohio

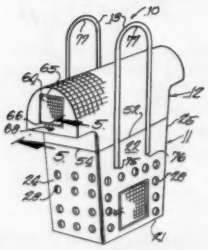
Filed Aug. 26, 1971, Ser. No. 175,294
Int. Cl. A01k *63/00*
U.S. Cl. 119—5 **11 Claims**



This invention relates to an illumination device which may be proportioned and constructed so as to effectively cover and illumine aquaria such as are found in homes as well as in public buildings and the like. The housing of the device and other portions which might oxidize if exposed to water are constructed of inexpensive non-corrosive material such as

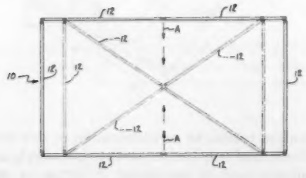
plastic, and other portions are of glass, so owners of salt water aquarias will find this device to be ideally suited to their needs. A fluorescent tube of the type which has been found to be beneficial to plant growth is preferably used as illumination means for providing the proper illumination for displaying the brilliant colors typically present in the tropical aquarium, which tube is shielded by a panel of glass from the water of the aquarium with which this device is used. The plastic housing, advantageously, is insulative both from the heat as well as the electrical standpoints, adding a distinct safety factor. The front portion of my device features a hinged access panel which enables the owner to easily feed and care for the fish in the aquarium, while the rear portion is fitted with removable panels so that filters, heaters, and similar types of aquarium accessories may be easily mounted in a convenient and unobtrusive portion of the aquarium.

3,834,352
TRAVEL BIRD CAGE
Tillie Gervis, 4390 Collins Ave., Miami Beach, Fla. 33140
Filed Jan. 14, 1974, Ser. No. 433,276
Int. Cl. A01k *31/00*
U.S. Cl. 119—17 **5 Claims**



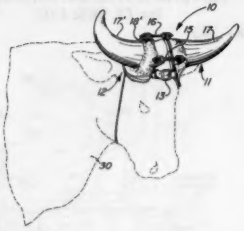
A bird cage for confining small birds during transportation of the birds from one place to another and consisting of a bottom half fabricated out of transparent rigid material provided with perforated ventilating openings throughout and having an entrance door in a side thereof and a clean out door in the bottom thereof, a top half manufactured of a fine mesh material which is affixed to the top edge of the bottom half, the top half provided with porch like extensions with at least one extension having an access door provided therein, and a pair of carrying handles affixed to opposite sides of the bottom half and projecting upwardly therefrom to a height above the top half and being manufactured of flexible material adapted to have the top portions thereof flexed together for ease of carrying in the hand of an individual when transporting the cage.

3,834,353
HAYSTACK FEEDER
Marlo W. Groezinger, Rt. 2, Freeport, Ill. 61032
Filed Nov. 12, 1973, Ser. No. 414,710
Int. Cl. A01k *5/00*
U.S. Cl. 119—60 **10 Claims**



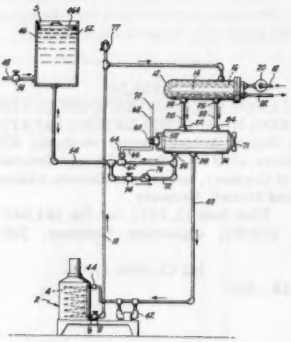
Six panels are hinged together at adjacent ends to form a haystack feeder. The hinging allows the feeder to collapse inwardly into two triangular configurations as the cattle eat away the haystack.

3,834,354
IMITATION HORNS FOR STEERS
Robert Lee Kelton, 1895 Hayden Ln., Tempe, Ariz. 85281
Filed Sept. 20, 1973, Ser. No. 398,945
Int. Cl. A01k *17/00*
U.S. Cl. 119—144 **6 Claims**



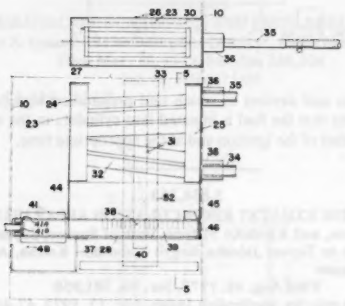
Apparatus comprising imitation hollow horns appropriately formed for slipping over the natural trimmed horns of a steer and attached to its head for rendering a steer with short horns usable for roping purposes and for protecting the steer's head from the rubbing effects of the rope.

3,834,355
STEAM SYSTEMS EQUIPPED WITH AN EXCHANGE RESERVOIR
Perry Arant, Huntington Beach, Calif., assignor to Clayton Manufacturing Company, El Monte, Calif.
Filed Sept. 12, 1973, Ser. No. 396,866
Int. Cl. F22b *35/00*
U.S. Cl. 122—33 **15 Claims**



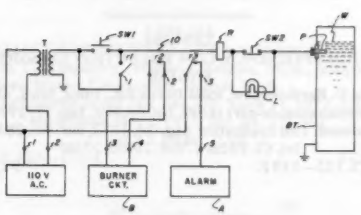
Closed, corrosion-free steam generating systems, including a heat exchanger and a condensate receiver, and having an exchange reservoir for pre-treated feed water; and control means arranged for the exchange of liquid between the reservoir and the condensate receiver to permit automatic "unloading" of excess liquid from the closed system while in operation and without discharge to waste, and for automatic or manual "loading" of the system upon cooling by return of liquid from the reservoir to the system, while preventing creation of a vacuum condition in the system that would draw contaminating air into the system.

3,834,356
ENGINE HEATING DEVICE
Frank Baillargeon, P.O. Box 409, Longlac, Ontario, Canada
Filed Aug. 25, 1972, Ser. No. 283,704
Int. Cl. F22b 17/00
U.S. Cl. 122—265 8 Claims



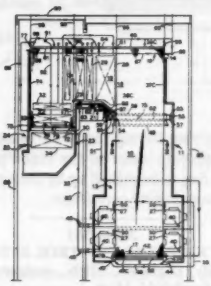
An auxiliary or preheater fueled by liquified propane gas or the like is temporarily connected to the coolant system of an engine for heating the coolant thereof. The heater includes a core heated by the propane through which the coolant from the engine system circulates by convection.

3,834,357
LOW-WATER CUT OFF SYSTEM
Leo W. Kaczmarek, Chicago, and Charles E. Adamson, Addison, both of Ill., assignors to International Telephone and Telegraph Corporation, New York, N.Y.
Filed June 7, 1973, Ser. No. 367,856
Int. Cl. F22b 37/42
U.S. Cl. 122—504 10 Claims



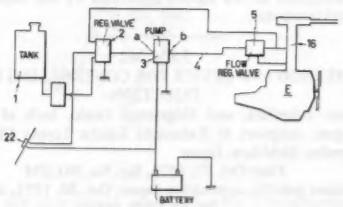
A system is disclosed for monitoring the water level in hot water boilers or the like and, when the water level falls below a prescribed level, turning off a burner and sounding an alarm. The system includes a manual control for testing whether the system is actually functioning, or not, and also whether it is functioning efficiently, or not. It incorporates improved probe means and means enabling servicing to be more efficiently carried out. Manual reset, or start, means are included to assure that the system will start-up after halting only when an attendent is at hand and thus prevents dry-firing.

3,834,358
VAPOR GENERATOR
Arthur M. Frendberg, Akron, Ohio, and Walter P. Gorzegno, Florham Park, N.J., assignors to The Babcock & Wilcox Company, New York, N.Y.
Filed July 9, 1965, Ser. No. 470,819
Int. Cl. F22b 37/24
U.S. Cl. 122—510 11 Claims



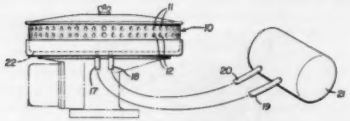
A forced flow vapor generator wherein the upright boundary walls of the furnace are subdivided into a plurality of separate continuous upflow fluid heating passes, with the parallel flow tubes of one of the fluid heating passes being interlaced and coextensive with the parallel flow tubes of another of the fluid heating passes, with provisions for interconnecting the tubes of the fluid heating passes to provide serial flow of fluid successively through the respective fluid heating passes and for mixing the fluids to equalize fluid enthalpies as they flow from one furnace fluid heating pass to another, and with the number and the total internal cross-sectional area of the tubes of one fluid heating pass being greater than the number and total internal cross-sectional area of the tubes in the other fluid heating pass to provide a fluid mass flow in the latter greater than the fluid mass flow in the former.

3,834,359
NOXIOUS GAS MINIMIZING METHOD AND APPARATUS FOR AN INTERNAL-COMBUSTION ENGINE
Akira Ando, Yokohama, Japan, assignor to Safer Co., Ltd., Tokyo, Japan
Filed Apr. 3, 1972, Ser. No. 240,721
Claims priority, application Japan, Apr. 30, 1971, 46-29283
Int. Cl. F02b 47/00; F02m 25/00
U.S. Cl. 123—1 A 16 Claims



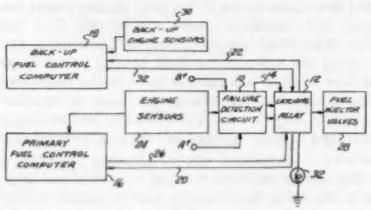
A method and apparatus for minimizing noxious gases that are contained in the waste gas of an internal-combustion engine wherein a liquid for minimizing the said gases (hereafter referred to as "the liquid") is automatically injected into the combustion chamber in a quantity equivalent to the volume of the produced noxious gases, and a method for protecting the internal-combustion engine.

3,834,360
ENGINE INTAKE AIR MOISTURIZER
James A. Blitch, P.O. Box 206, E. Palatka, Fla. 33026
Filed Apr. 26, 1973, Ser. No. 354,488
Int. Cl. F02d *19/00*
U.S. Cl. 123—25 A **8 Claims**



A porous clay ring having radial air passages and a water chamber for supplying water to the radial passages through the pores of the ring to be picked up by the air flowing through these passages to an engine carburetor.

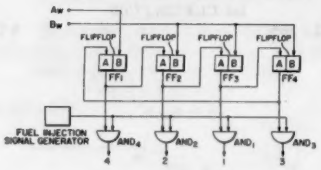
3,834,361
BACK-UP FUEL CONTROL SYSTEM
William A. Keely, Highland, Mich., assignor to The Bendix Corporation, Southfield, Mich.
Filed Aug. 23, 1972, Ser. No. 283,145
Int. Cl. F01b *25/08*; **F02g** *3/00*; **F02b** *3/00*
U.S. Cl. 123—32 EA **16 Claims**



A back-up fuel control system is disclosed herein for sustaining the operation of an electronic fuel control system of an internal combustion engine in the event of a malfunction in the primary fuel control computer or its associated sensors. The back-up fuel control system comprises an unsophisticated electronic computer which responds to a minimal number of engine sensors and generates a signal indicative of the engine's fuel requirements and a failure detection circuit monitoring the performance of the primary fuel control computer. The failure detection circuit automatically activates the back-up fuel control computer and switches the fuel delivery means response from the signals generated by the primary fuel control computer to the signals generated by the back-up fuel control computer.

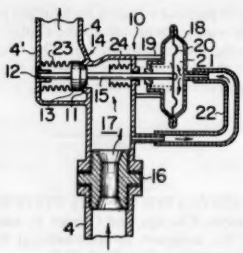
3,834,362
METHOD AND DEVICE FOR CONTROLLING FUEL INJECTION
Tomon Takeshita, and Shigetsugu Ozaki, both of Nagoya, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi-ken, Japan
Filed Oct. 27, 1972, Ser. No. 301,274
Claims priority, application Japan, Oct. 30, 1971, 46-86586
Int. Cl. F02b *3/00*
U.S. Cl. 123—32 EA **11 Claims**

Method and device for controlling fuel injection in a multicylinder spark-ignition engine, wherein the fuel injection preparation signals are sequentially produced from the ignition signals generated for all of the cylinders and the ignition signal applied to a certain cylinder, and are applied to devices for actuating the fuel injection valve of the cylinders in the same order as that of the ignition. Signals produced by the ignition signals are delayed for a predetermined time depending upon the engine speed and load and said delayed signals are



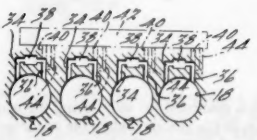
applied to said devices to which said preparation signals are applied, so that the fuel is injected into cylinders in the same order as that of the ignition and at the appropriate time.

3,834,363
ENGINE EXHAUST RECIRCULATION APPARATUS
Kenji Goto, and Kiyohiko Mizuno, both of Susono, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi-ken, Japan
Filed Aug. 18, 1972, Ser. No. 281,950
Claims priority, application Japan, Apr. 17, 1972, 47-44289
Int. Cl. F02b *33/00*; **F02m** *7/00*
U.S. Cl. 123—119 A **2 Claims**



An apparatus is provided for the recirculation of exhaust gases from an automobile's engine at a constant volume comprising a flow control valve in a passage for recirculating part of the engine exhaust gases into the engine's intake system.

3,834,364
HIGH EFFICIENCY-LOW POLLUTION EMISSION ENGINE
Donald D. Bartholomew, 8984 Devon Rd., Utica, Mich. 48087
Continuation-in-part of Ser. No. 55,919, July 17, 1970, abandoned. This application Aug. 24, 1972, Ser. No. 283,301
Int. Cl. F02m *27/08*, *29/00*, *27/00*
U.S. Cl. 123—119 E **9 Claims**



A high efficiency, low pollution engine utilizing a source of ultrasonic energy to produce atomization of the fuel or fuel mixture preparatory to or after the fuel has been delivered to the combustion chambers of the engine; the means for producing the ultrasonic energy including in part the high pressure gases or gaseous mixture produced by the engine it-

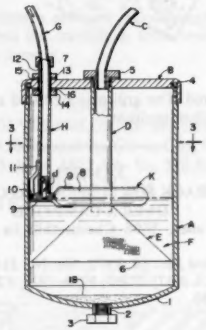
self during operation thereof. The high pressure gases are caused to pass over or through a suitable whistle like structure that produces high frequency or ultrasonic sound wave energy which is selectively communicated to the fuel prior to the same being ignited within the engine's combustion chambers and/or to the engine exhaust.

3,834,365

CRANKCASE SCAVENGER AND SMOG REDUCER

Isaac S. Ussery, 10121 Denny St., Oakland, Calif. 94603

Filed Mar. 30, 1973, Ser. No. 346,304
Int. Cl. F02m *25/06*
U.S. Cl. 123—119 B **2 Claims**



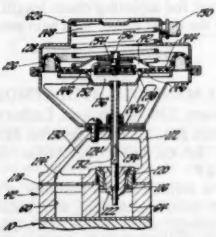
A crankcase scavenger and smog reducer which receives gaseous fumes through a conduit that leads from the crankcase of an internal combustion engine and draws these fumes through a body of the fuel used to operate the engine, this body of fuel being contained in a separate tank and diluting any hydrocarbons in the fumes and permitting the heavier particles to drop to the bottom of the body of fuel. A cone-shaped diffusion member is mounted on the outlet end of the conduit and is submerged in the fuel body. The fumes will be drawn through the body of fuel and out through the top of the tank by means of a conduit that leads to the intake manifold. The vacuum created in the intake manifold is sufficient to draw the washed fumes from the top of the tank.

3,834,366

EXHAUST GAS RECIRCULATION CONTROL VALVE

William L. Kingsbury, Madison Heights, Mich., assignor to General Motors Corporation, Detroit, Mich.

Continuation of Ser. No. 244,378, April 17, 1972. This application July 2, 1973, Ser. No. 375,362
Int. Cl. F02m *25/06*
U.S. Cl. 123—119 A **5 Claims**



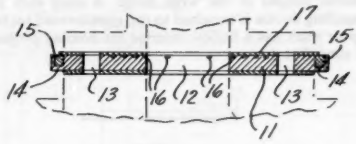
A vacuum operated valve responsive to exhaust back pressure controls recirculation of exhaust gases from the intake manifold exhaust crossover passage to the intake manifold induction passages.

3,834,367

CARBURETION ATTACHMENT FOR AUXILIARY AIR

Rolando Mario Dalerta, 10850 N.W. 10th Ave., Miami, Fla. 33168

Filed May 18, 1973, Ser. No. 361,455
Int. Cl. F02m *23/04*
U.S. Cl. 123—124 R **5 Claims**



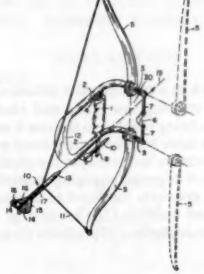
A carburetion attachment consisting of a relatively thin insert to be bolted between the carburetor and the intake manifold. The insert has the shape of a normal gasket separating the carburetor from the intake manifold. The insert has openings extending downwardly therethrough coinciding with the throats of the carburetor and the securing bolts therefor. One face of the insert has spiral grooves formed therein with their inner ends opening into the throat opening and their outer ends opening into the peripheral groove in the insert. A felt member is positioned in the peripheral groove to serve as a filter. A plate completely covers the spiral grooves and extends over half of the felt filter in the peripheral groove. The plate seals the spiral grooves to prevent the leakage of air therefrom.

3,834,368

ARCHERY BOW WITH A SLING SHOT IN COMBINATION

Ervin D. Geiger, R. R. No. 4, Albion, Ind.

Filed June 4, 1971, Ser. No. 149,916
Int. Cl. F41b *7/00*
U.S. Cl. 124—20 B **13 Claims**

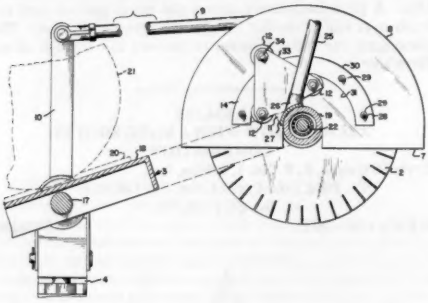


A bow and sling shot in combination has a construction in which sections are cantilever supported to define a laterally extending opening between the two cantilever sections. The opening permits unrestricted vision whereby the user can employ binocular sighting to follow the flight of the arrows. The open section also permits any preferred configuration for the projectile including stabilizer sections which makes a more stable flight pattern for the projectile once it is released and passes through the opening. The bow configuration causes the bowstring to move in a plane which is offset from a user's

forearm thus preventing slapping, scraping and injury to the forearm as the bowstring moves from extended to released position.

A grip which is laterally offset from the bowstring is combined with an inner-forearm-contacting bow section so that as the bowstring is pulled back the twisting tendency about the grip is resisted by the forearm reaction section of the bow whereby the bow is prevented from twisting about the grip. By combining both the forearm reaction section and the grip, as the combined mounting and steadying a greater pull can be applied to the bowstring because of the use of naturally greater muscular abilities of the combination of wrist and forearm instead of the wrist alone. A sling shot projectile propelling device is attached to the cantilevered sections. The grip or shaft has a hollow interior for holding projectiles for the sling shot.

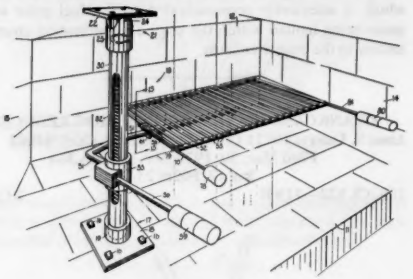
3,834,369
SAW BLADE HOOD LEVELING STRUCTURE
Victor H. Haase, Kansas City, Mo., assignor to Robert G. Evans, Company, Kansas City, Mo.
Filed Jan. 22, 1973, Ser. No. 325,663
Int. Cl. B28d *1/04*
U.S. Cl. 125—13 SS **5 Claims**



A rotary saw, such as a masonry saw includes a rocker platform supporting a rotating saw blade and blade driving elements, the platform being pivoted to the saw frame and spaced above a work piece table surface. A saw hood partially covers the blade and is pivotally mounted on the platform by an external curved band or segment engaging multiple grooved rollers. A pivotal link connects the hood to a standard mounted on the saw frame and maintains the lower edge of the hood in a horizontal attitude regardless of platform tilt angle.

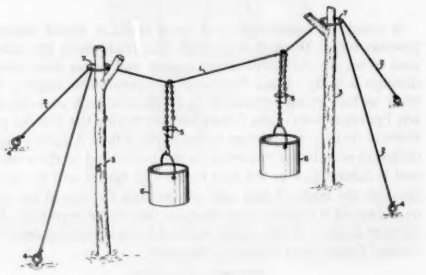
3,834,370
ASSEMBLY
John R. Nelson, Roby Rd., Stoughton, Wis. 53589
Filed Feb. 8, 1971, Ser. No. 113,387
Int. Cl. F24b *1/26*
U.S. Cl. 126—137 **11 Claims**

A grill for use in a fireplace or outdoors comprises a rack and pinion elevating assembly. A shaft which operates the pinion may be pushed to lock the elevating assembly and pulled to unlock the elevating assembly so that the grill may be



raised or lowered. The grill may be tilted and latched in any one of several tilted positions.

3,834,371
FOLDABLE RACK FOR SUSPENDING COOKING PANS OVER A CAMPFIRE
Wilhelm E. Walles, 3606 Chestnuthill Dr., Midland, Mich. 48640
Filed Jan. 10, 1972, Ser. No. 216,391
Int. Cl. A47j *37/00*; F24b *3/00*; F24c *1/16*
U.S. Cl. 126—30 **1 Claim**



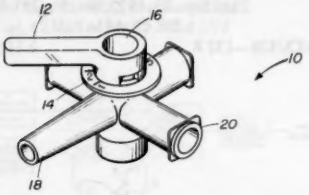
The invention is a one-piece lightweight foldable rack for suspending cooking pans over a campfire.

The one-piece rack consists of a center metal chain supported by 2 vertical sticks or poles and kept over the fire by four rope supports, secured by pegs and has two adjustable metal chains with hooks to hold the pans. The chain for holding a pan has at one end a hook for a cooking pan and at its other end a hook for adjusting chain length, including an eye through which the other end of the chain passes.

3,834,372
DISPOSABLE MANIFOLD WITH ATMOSPHERIC VENT
Stephen Z. Turney, 320 Morris Ave., Lutherville, Md. 21093
Filed Jan. 12, 1973, Ser. No. 323,272
Int. Cl. A61b *5/02*; A61m *1/00*
U.S. Cl. 128—2 F **14 Claims**

A manifold is formed with a plurality of ports for connection to various components such as arterial-venous pressure generators, a syringe, and a source of fluid and pressure sensitive transducers. The manifold includes one or more rotary members which are selectively positioned for interconnecting selected ones of the components. Various sampling, flushing and pressure measuring operations may be performed by use

of the manifold. The manifold further includes a venting port arrangement for venting the pressure sensitive transducers to



the atmosphere when a pressure measurement is not being taken. This protects the transducer from overpressurization and consequential damage.

3,834,373

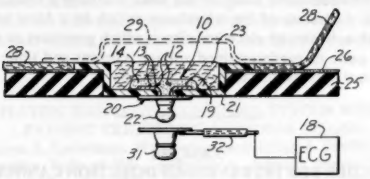
SILVER, SILVER CHLORIDE ELECTRODES

Takuya R. Sato, 5130 Randall St., Culver City, Calif. 90230

Filed Feb. 24, 1972, Ser. No. 228,827

Int. Cl. A61b 5/04

U.S. Cl. 128—2.06 E **25 Claims**



Silver, silver chloride electrodes comprise a plurality of silver particles and silver chloride particles and an electrically insulating, water impermeable, inert organic matrix therefor. The silver particles and silver chloride particles are interspersed with each other in and throughout the matrix.

3,834,374

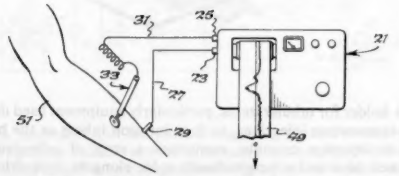
DIAGNOSTIC ELECTRICAL SCANNING

Minas Ensanian, P.O. Box 98, Eldred, Pa. 16731

Filed Apr. 6, 1972, Ser. No. 241,635

Int. Cl. A61b 5/04

U.S. Cl. 128—2.1 R **7 Claims**



Body surface bioelectrical potentials are determined and recorded by use of a stationary electrode in contact with the body surface and an exploratory electrode which comprises a rotatable element, that preferably carries an electrolyte. Scanning of the body surface along a continuous path or over an area is carried out by rolling at least one exploratory electrode over the said surface, thus permitting mapping of the potentials along the line or over the area contacted by the exploratory electrode, whereby abnormalities of the skin or portions of the body under the skin may be detected.

3,834,375

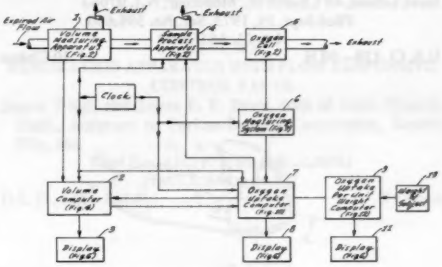
RESPIRATORY GAS ANALYZER FOR MEASURING AND DISPLAYING OXYGEN UPTAKE IN EXPIRED AIR

Clifford Sanctuary, Palos Verdes Estates; Donald C. Woods, Big Bear City, and John A. Bachman, Woodland Hills, all of Calif., assignors to Del Mar Engineering Laboratories, Los Angeles, Calif.

Division of Ser. No. 243,369, April 12, 1972,. This application July 20, 1973, Ser. No. 380,975

Int. Cl. A61b 5/08

U.S. Cl. 128—2.07 **6 Claims**



A respiratory gas analyzer is provided in the form of a breath gas measuring instrument and system in which the oxygen uptake in the expired air of a subject, and the oxygen consumption per unit of weight of the subject, are periodically calculated and digitally displayed. A true sample of the expired air is accumulated by gradual extraction within the system of the invention on a periodic basis for gas analysis, and a computer included in the system calculates the oxygen depletion of each total sample to standard temperature and at ambient pressure and provides a digital display of oxygen uptake. An additional computer is included in the system which responds to the compensated oxygen depletion and to the subject's weight to provide a digital display of the oxygen uptake per unit weight of the subject.

3,834,376

ORTHOPEDIC APPLIANCE

Oskar Thum, Fibigerstrasse 81, Hamburg, Germany

Filed Apr. 10, 1973, Ser. No. 349,784

Claims priority, application Germany, Apr. 11, 1972, 2217289

Int. Cl. A61f 3/00

U.S. Cl. 128—80 A **15 Claims**

An orthopedic appliance is disclosed which is particularly useful for correcting hip dislocations in children. The appliance is intended to maintain the legs of a child spread apart in such a manner that the thighs extend laterally of the torso and normal thereto. The appliance consists of a shell having

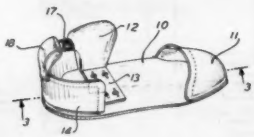
two spaced leg support sections which are connected by an arcuate transverse wall. The transverse wall defines a cavity intermediate the leg support sections. When the shell is placed between the legs of a child so as to spread these apart, the leg support sections at least partly encircle the thighs and the cavity is located between the legs and is open to the buttocks. Shoulder straps are provided for maintaining the shell in requisite position on the child.

3,834,377

EASILY REMOVABLE ORTHOPEDIC SHOE PLATFORM

Steve Lebold, 45 Church St., Montclair, N.J. 07042

Filed Sept. 19, 1973, Ser. No. 398,660
Int. Cl. A61f 3/00
U.S. Cl. 128—80 H **10 Claims**



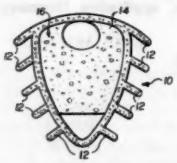
This invention relates to an orthopedic device adapted for application to the shoe of a patient having partial paralysis or other infirmities which may induce weak or rolling ankles or a tendency for foot drop and which will provide ankle and foot support, said device being easily attached and removed by the patient with one usable hand or by another party.

3,834,378

INTRAUTERINE DEVICE

Irwin S. Lerner, Greenwich, Conn.; Hugh J. Davis, Baltimore, Md., and Thad J. Earl, Defiance, Ohio, assignors to A. H. Robins Company, Incorporated, Richmond, Va.

Continuation of Ser. No. 88,538, Nov. 12, 1970, abandoned.
This application Feb. 26, 1973, Ser. No. 336,066
Int. Cl. A61f 5/46
U.S. Cl. 128—130 **17 Claims**



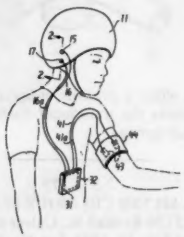
An intrauterine device composite is provided which comprises a plastic matrix, such as a copolymer of ethylene and vinyl acetate, having a particulate material selected from the group consisting of metals such as copper, zinc, silver, platinum, or cadmium, and metal salts dispersed within the matrix. The particulate preferably includes both a metal and a salt, such as a sulfate, thereof, although solely a salt or a metal particulate may be utilized. In addition, a radio-opaque particulate such as barium sulfate is preferably also dispersed within the composite. The particulate material preferably comprises between 0.1% to 50% by weight of the composite, and the matrix preferably has a water permeability or rate of water vapor transmission of at least 0.3 grams/100 square inches/24 hours/mil at 25° C.

3,834,379

DETERRENT FOR SELF-DESTRUCTIVE ACTIONS

Mooza V. P. Grant, 4510 Cumberland Ave., Chevy Chase, Md. 20015

Filed Sept. 25, 1972, Ser. No. 291,576
Int. Cl. A61n 1/38
U.S. Cl. 128—132 R **3 Claims**



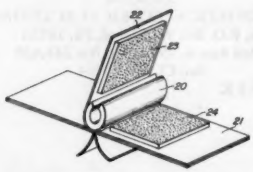
A helmet to be worn by a patient having a tendency to inflict self-destructive blows to the head, contains a transducer switch. Actuation of the transducer switch by a blow to the helmet, activates an electrical circuit which generates an electrical pulse of predetermined voltage, current and time. The electrical pulse is used to shock the patient.

3,834,380

HOLDER FOR INTRAVENOUS INJECTION CANNULA AND TUBING

William A. Boyd, 3599 Wellington, Salt Lake City, Utah 84106

Filed Nov. 15, 1972, Ser. No. 306,610
Int. Cl. A61m 05/00, 25/02
U.S. Cl. 128—133 **8 Claims**



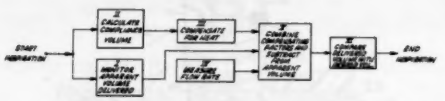
A holder for tubular items, particularly equipment used during intravenous injections, such as infusion tubing or the hub of an injection cannula, comprises a strip of adhesively-backed tape and a longitudinally split, elongate, cylindrical, clamping tube of flexible and preferably resilient plastic material securely attached to the top of the tape. A latch for positively keeping the clamping tube closed about a received item may be provided, preferably in the form of a securement flap attached to the clamping tube at one side thereof and interlocking means having component parts attached, respectively, to the securement flap and at the opposite side of the clamping tube. For holding both an injection cannula and infusion tubing during the administering of an intravenous liquid, two or more clamping tubes may be provided in juxtaposed position on a single piece of tape.

3,834,381

COMPLIANCE COMPENSATED VENTILATION SYSTEM

Kenneth M. Peterson, Venice, Calif., assignor to Puritan-Bennett Corporation, Kansas City, Mo.

Filed Aug. 25, 1972, Ser. No. 283,915
Int. Cl. A61m *16/00*; G01d *5/14*
U.S. Cl. 128—145.6 10 Claims



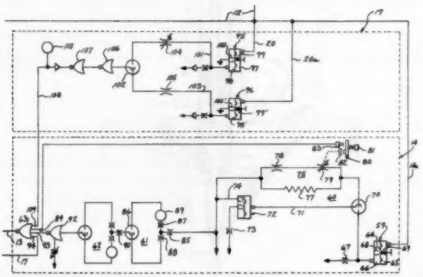
Method and apparatus for maintaining a substantially constant volume of gas flow to a patient, particularly an infant, with a volume-limited ventilation system, regardless of changes in the pressure and compliance of the delivery system or patient. The delivery pressure is monitored and combined with corrective factors derived from compliance changes in the system, gas heating under pressure, initial gas pressure, and gas overflow due to inherent system delays. The combined corrections are used to compute a compliance-compensation volume which is the volume of gas trapped within the gas delivery system. The compliance compensation volume is subtracted from the apparent volume of gas delivered to the system to determine the volume of gas actually delivered to a patient. The delivered volume is then compared with a desired reference volume and is terminated when they are equal.

3,834,382

FLUIDIC RESPIRATOR CONTROL SYSTEM WITH PATIENT TRIGGERING RESPONSE MEANS

Warren A. Lederman, Wauwatosa, and Alfred J. Pawlak, Milwaukee, both of Wis., assignors to Johnson Service Company, Milwaukee, Wis.

Filed Sept. 5, 1972, Ser. No. 286,293
Int. Cl. A61m *16/00*
U.S. Cl. 128—145.8 14 Claims



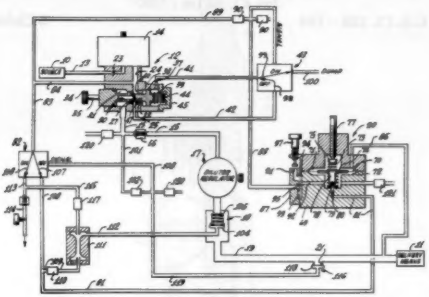
A respirator unit has patient triggering control means with an isolating fluidic repeater connected to an operational amplifying circuit employing a summing impact modulator and a feedback network. Two cascaded stages of differentiation connect the amplifying circuit to an output logic gate for controlling a control oscillator to initiate an inhalation cycle. An inhibit circuit includes a pair of pressure taps connected to spaced points on the flow line. Fluidic repeaters connect the taps to a fluidic comparator. A fluidic time delay means is connected to the output of the comparator and connected in common to the output logic gate to inhibit the triggering control means during the exhalation cycle. The fluidic oscillator includes a flip-flop circuit with output lines interconnected to control the exhalation and inhalation valves between the fluid air-oxygen mixer source and the patient. Inhalation and exhalation time adjustment means are provided. A positive pressure cutoff circuit includes a fluidic amplifier which produces a logic on-off type signal in accordance with the magnitude of patient pressure and is connected to the oscillator to terminate the inhalation cycle and initiate the exhalation cycle. An automatic selection switch means is provided to selectively deactivate the inhalation and exhalation time adjustment, and the triggering control means to control the respirator operating mode.

3,834,383

RESPIRATION APPARATUS WITH FLOW RESPONSIVE CONTROL VALVE

James Weigl, and James E. P. Davis, both of Santa Monica, Calif., assignors to Puritan-Bennett Corporation, Kansas City, Mo.

Filed Dec. 11, 1972, Ser. No. 313,981
Int. Cl. A61m *16/00*
U.S. Cl. 128—145.8 7 Claims



Intermittent positive pressure breathing apparatus having a combined flow-responsive and control valve which is opened to initiate the inspiration phase of a breathing cycle by a triggering valve, monitors the decreasing flow rate resulting from back-pressure buildup in the apparatus, and closes to terminate the flow at a selected and adjustable terminal flow rate. The control valve has a plunger that is carried by a piston upon which differential pressures are applied from the inlet and outlet ends of the valve's flow passage, and a spring assists the outlet pressure in urging the plunger toward an annular seat which is adjustably positioned on one side of the passage and defined as the beveled end of a tubular seat member. The plunger is positioned in the passage in accordance with the flow rate to maintain a constant pressure drop, and engages the seat to shut off all flow when the rate falls to the selected terminal flow rate.

3,834,384

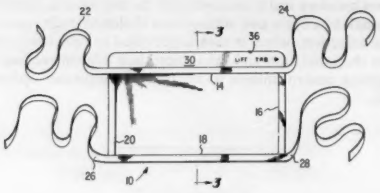
SURGICAL MASK WITH ADHESIVE VAPOR BARRIER

Herman R. Raines, 32 Henley Rd., Overbrook Hills, Pa. 19151

Filed May 1, 1973, Ser. No. 356,184
Int. Cl. A62b *23/02*
U.S. Cl. 128—146.2 4 Claims

The invention provides an improved surgical mask which provides a vapor barrier between the mouth and nostrils which

are covered by the mask during the use of the same, and the area proximate the eyes of the user and thus prevents the

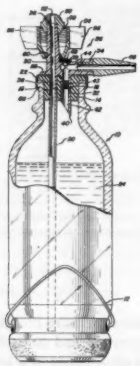


fogging or clouding of any optical device being used by the user.

3,834,385
DISPOSABLE HUMIDIFIER

Michael O. Pekkarinen, Lincolnshire, Ill., assignor to Baxter Laboratories, Chicago, Ill.

Filed Nov. 9, 1972, Ser. No. 304,943
Int. Cl. A61m *15/00*
U.S. Cl. 128—194 **8 Claims**



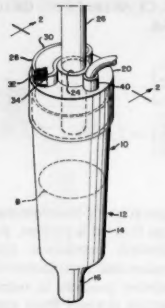
Oxygen to be administered to a patient is humidified by passing the oxygen through a standard water-containing solution bottle. A coupling assembly having an inlet tube and an outlet tube is inserted into the two openings defined by the stopper of the intravenous solution bottle, and is coupled to an oxygen supply. The connector assembly is capable of supporting the bottle, and carries a humidified oxygen outlet to which a nasal cannula is coupled.

3,834,386
BLOOD DRIP CHAMBER

James R. Sisley, Seattle, Wash., assignor to Sweden Freezer, Seattle, Wash.

Filed Sept. 7, 1972, Ser. No. 286,857
Int. Cl. A61m *5/16*
U.S. Cl. 128—214 C **4 Claims**

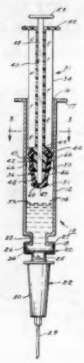
A blood drip chamber is provided with a cap having a large penetration area which includes a self-sealing rubber supported by a layer of stiffer material. The inner surface of the stiffening material is at the same general level as the remainder of the inner surface of the cap so that blood is not held by capillary action in the penetration area. The blood drip chamber includes a reservoir having a sidewall, a lower discharge port and an upper end. A blood inlet port is positioned centrally in the cap so that the inflow of blood is maintained away from the sidewalls of the reservoir.



3,834,387
BREECH LOADED SYRINGE WITH DEFORMABLE PISTON

Alexander M. Brown, Daytona Beach, Fla., assignor to Sherwood Medical Industries, Inc., St. Louis, Mo.

Filed Aug. 10, 1972, Ser. No. 279,614
Int. Cl. A61m *5/22*
U.S. Cl. 128—218 P **4 Claims**



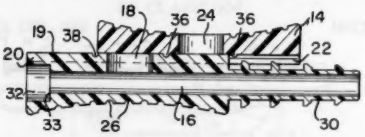
A plunger assembly for a syringe adapted to be filled through the breech end of the syringe barrel including a piston rod having a piston on the distal end thereof for insertion into the breech end of the barrel, and a piston control member slidable in an opening in the piston rod and engageable with the interior of the piston to stretch the piston and provide a vent passage around the piston during movement of the piston and piston rod in the barrel. Medicament is introduced into the syringe barrel to the desired level and the plunger rod and control member are moved relative to each other to stretch and deform the piston. The deformed piston is then moved in the syringe barrel to a desired position and released by the control member into sealing engagement with the barrel.

3,834,388

SUCTION CONTROL ARRANGEMENT FOR A SUCTION CATHETER

Philip H. Sauer, Bolingbrook, Ill., assignor to Cenco Medical/Health Supply Corporation, Chicago, Ill.

Filed Jan. 29, 1973, Ser. No. 327,814
Int. Cl. A61m *1/00*
U.S. Cl. 128—276 **5 Claims**



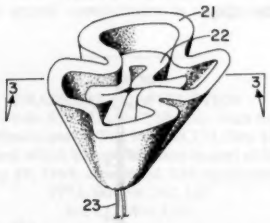
A suction control arrangement for a suction catheter having a body portion with a passageway formed longitudinally therethrough and a port means formed therein to provide access to the interior of the passageway, and having a cap means mounted on the body portion with an opening formed in it. The cap means is movable on the body portion such that the opening in the cap means and the port in the body portion may be aligned to eliminate suction through the passageway and the body means when the body means is attached at its opposite ends to suction conduit means in a suction catheter system. Alternately, the cap means may be moved to a closed position over the port means to establish suction in the system. The body portion and cap means have cooperative locking means to maintain the cap means in selected open or closed position with respect to the body portion.

3,834,389

TEXTILE TAMPON HAVING A RESILIENT FOAM CORE

Bernard Allen Dulle, Montgomery, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Nov. 28, 1972, Ser. No. 310,035
Int. Cl. A61f *13/20*
U.S. Cl. 128—285 **12 Claims**



A textile tampon having a compressible resilient spongiform core within the textile mass to cause the textile mass to expand laterally in the vagina so that the tampon conforms to the cross section of the vagina, thereby forming an intimate contact between the textile mass and the vaginal walls.

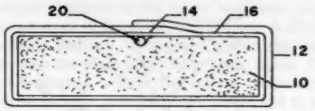
3,834,390

COMBINATION NEUROSURGICAL SPONGE

Winfred S. Hirsch, Plainview, N.Y., assignor to Edward Weck & Company, Inc., Long Island City, N.Y.

Filed Nov. 20, 1972, Ser. No. 307,884
Int. Cl. A61f *13/00*
U.S. Cl. 128—296 **12 Claims**

A neurosurgical sponge has an inner, highly absorbent nonwoven layer. A porous, nonwoven laminate is wrapped about the inner layer with the cut edges folded underneath the folded end. A piece of x-ray detectable material is inserted between the two layers and the layers are stitched or heat sealed together.

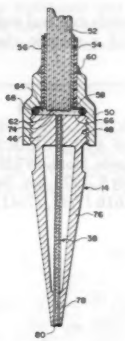


3,834,391

METHOD AND APPARATUS FOR PHOTOEPILATION

Carol Block, Chicago, Ill., assignor to Carol Block, Ltd., Chicago, Ill.

Filed Jan. 19, 1973, Ser. No. 325,026
Int. Cl. A61n *5/06*; A61b *17/00*
U.S. Cl. 128—303.1 **7 Claims**



Photoepilation apparatus comprises a needle or probe carrying a single protected optical fiber which is supported throughout its length adapted to be connected into a photoepilation system including a gaseous discharge source of light energy. The free end of the probe is tapered with a gradual taper to a relatively fine diameter to enable said free end to be brought close to the follicle entrance of a hair shaft or body it is desired to remove.

The method disclosed includes applying light energy in flashes through the use of the optical fiber at the entrance to a hair follicle.

3,834,392

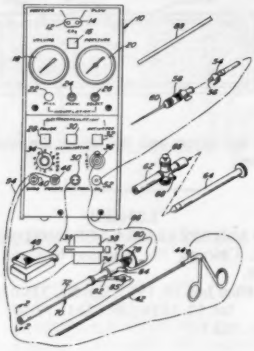
LAPAROSCOPY SYSTEM

Russell A. Lampman, Yardley, and William R. Knepshield, Malvern, both of Pa., assignors to KLI, Inc., Ivyland, Pa.

Filed Feb. 1, 1973, Ser. No. 328,513
Int. Cl. A61b *17/36*
U.S. Cl. 128—303.13 **4 Claims**

A laparoscopy system for female sterilization whereby a single unit contains the power source to provide illumination, oscillatory electrical power and CO_2 for a laparoscopy. CO_2 gas, under pressure, is first passed into the body through a needle into the peritoneal cavity. The fallopian tubes are identified and then the laparoscope, which contains a telescope connected to a source of illumination, is inserted into the body cavity. A flexible forceps is, thereafter, inserted through the laparoscope into the body cavity. The forceps is manipulated

to successively close the passage through each fallopian tube, either by means of sending electrical oscillations through the



forceps to simultaneously cut, seal and cauterize each tube in turn, or by means of a specific clamp which clamps the passage shut.

3,834,393

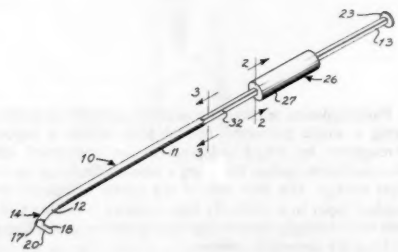
VETERINARY SURGICAL TOOL FOR ENLARGING THE PELVIC GIRDLE OF A HEIFER DURING PARTURITION

Robert B. Goggins, Ennis, Mont. 59729

Filed July 9, 1973, Ser. No. 377,301

Int. Cl. A61b *17/32, 17/42*; **A61d** *1/08*

U.S. Cl. 128—305 **4 Claims**



A veterinary tool facilitating sectioning of the pelvic floor of a heifer to remedy dystacia in parturition of a heifer comprises an elongated shank having a hook-shaped section at a forward end and an abutment flange at a rearward end. A slidably impact weight is mounted to the shaft forward of the abutment flange. The hook-shaped section includes a rearwardly facing, angularly projecting knife edge and a forwardly projecting blunt point. A portion of the shank is polygonal in cross-section and extends through a complementary opening within the impact weight. This relationship provides for longitudinal movement of the impact weight along the shank but prevents angular movement of the shank and weight relative to one another facilitating manual angular alignment of the knife edge by turning the weight about the shank axis. The impact weight may be forcibly moved longitudinally along the shank to strike the abutment flange creating a reaction force sufficient to pull the knife edge rearwardly to section the pelvic floor of the heifer and thereby allowing enlargement of the transverse diameter of the pelvic girdle.

3,834,394

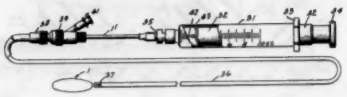
OCCLUSION DEVICE AND METHOD AND APPARATUS FOR INSERTING THE SAME

James A. Hunter, 1725 West Harrison, Chicago, Ill. 60605, and Robert W. Sessions, 1309 Lloyd Ave., Lombard, Ill. 60608

Continuation of Ser. No. 878,813, Nov. 21, 1969, abandoned. This application Feb. 23, 1972, Ser. No. 232,323

Int. Cl. A61b *17/12*; **A61m** *25/00*

U.S. Cl. 128—325 **34 Claims**



A method of effecting the occlusion of a blood vessel by forming an access opening in the body of the patient communicating with the desired blood vessel, introducing an occluson member in the vessel, moving the member to the desired point of occlusion, and thereat expanding the member to a size greater than the diameter of the vessel whereby the member is substantially immovably retained therein; the member comprising an expandable and contractable body, capable of disposition in a relatively contracted state in which it may be positioned at the desired point of occlusion, or in an expanded state, the body being constructed to contain the means for effecting such expansion; an example of apparatus for practicing the method comprising a catheter in the form of an elongated tubular conduit of a length to extend from said desired point of occlusion to said access opening and constructed at one end for operative connection with such an occlusion member and the other end for operative connection with actuating means cooperable with means disposed in the tubular conduit for effecing transition of said member from one of its states to the other of its states.

3,834,395

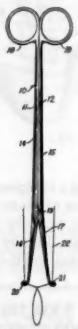
KNOT TYING INSTRUMENTS

Manuel V. Santos, Soutelo Branca, Aveiro, Portugal

Filed Mar. 9, 1973, Ser. No. 339,588

Int. Cl. A61b *17/12*

U.S. Cl. 128—326 **1 Claim**



Knot tying instruments are intended for use by surgeons for applying loops or knots in threads in the body of a patient. Each instrument has a pair of jaws or holders through which or around which a thread is passed. According to one construction the thread holders are attached to the ends of two elongated bars which are pivoted to provide a scissor-like struc-

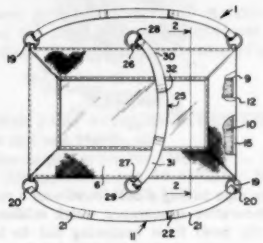
ture. The opposite ends may have rings to be held by the fingers of the user. According to another construction the thread holders are firmly held by an elongated rod the opposite end of which carried a handle.

3,834,396

TEMPERATURE DIFFERENTIAL APPLICATOR HOLDER

Stephen F. Foster, and Linda R. Foster, both of 440 Tefft, Apt. 7, Topeka, Kans. 66607

Filed June 18, 1973, Ser. No. 370,953
Int. Cl. A61f 7/04
U.S. Cl. 128—403 **10 Claims**



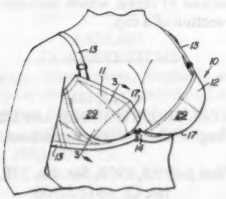
A holder for items used to apply a temperature differential to a selected portion of the body of a user includes a first compartment formed of panels of flexible porous material and adapted to receive a heating pad therein. A pocket overlies the first compartment and is adapted to receive a moist cloth and retain same in a position having a center portion thereof exposed and the pocket is formed of an edge portion of one of the panels of the first compartment. A second compartment overlies the other panel of the first compartment and is adapted to receive cold objects, such as ice cubes or the like therein, and the second compartment is formed by an exterior flexible porous panel secured in overlying relation with the other panel of the first compartment. Fastening members are mounted on the panels forming the first and second compartments for closing same. Attachment members are mounted on the holder for removably attaching same to a selected portion of the body of a user with either the pocket or the exterior panel of the second compartment in engagement with the user.

3,834,397

BRASSIERE CONSTRUCTION

Bonnie Alice Birch, 556 Delno Dr., Murray, Utah 84107

Continuation-in-part of Ser. No. 188,171, Oct. 12, 1971, abandoned, which is a continuation-in-part of Ser. No. 825,739, May 19, 1969, abandoned. This application Mar. 14, 1973, Ser. No. 341,120
Int. Cl. A41c 3/10
U.S. Cl. 128—480 **10 Claims**



A brassiere for improving the bustline of the wearer, by creating a pronounced cleavage in the bustline and providing a full, naturally appearing bustline, has a shell with two cups provided with appropriate straps and fastening means for securing the brassiere to the wearer. Each cup comprises a shaped foam rubber layer and has multiple outer layers of a padding material attached to the lower and outer underarm circumferencial areas of the foam rubber layer. A thick inner layer of padding material is disposed within the cup correspondingly with the placement of the outer layers. The cup construction is adapted to force the natural bosom upwardly and inwardly to create a pronounced cleavage and to provide a desireable, naturally appearing softness, fullness, and shape to the bustline.

3,834,398

SMOKABLE SUBSTITUTE MATERIAL

Theodore S. Briskin, Beverly Hills; Norman G. Schnautz, Van Nuys, and Inderjit Sabherwal, Los Angeles, all of Calif., assignors to Sutton Research Corporation, Los Angeles, Calif.

Filed Feb. 22, 1972, Ser. No. 226,267
Int. Cl. A24b 13/00
U.S. Cl. 131—2 **13 Claims**

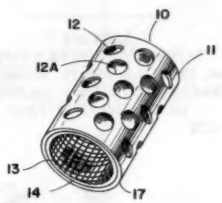
A smokable material and cigars and cigarettes formed thereof comprising a mixture of a resinous binder comprising the homopolymer or copolymer of the hydroxy and ketone derivatives of vinylene carbonate and a combustible filler. Non combustible fillers may also be added. The combustion products of the composition are primarily carbon dioxide and water.

3,834,399

TOBACCO SMOKING EQUIPMENT

Jon W. Beam, 510 Cherry St., Cushing, Okla. 74023

Filed Nov. 24, 1972, Ser. No. 309,157
Int. Cl. A24d 01/14, 01/22
U.S. Cl. 131—3 **9 Claims**

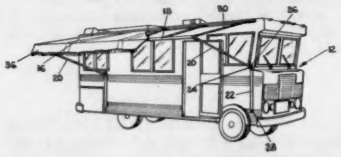


A detachable charge housing is provided wherein the side wall is perforated with a plurality of air vent openings that are covered internally by an overlapping paper section which is both porous and absorbent which is wrapped around a metal screen wire sleeve inserted into the charge housing in such a manner that the disposable assembly is retained by frictional contact and with the thusly described charge housing assembly being loaded with smoking tobacco and seated vertically in the upstream open end of a smoking holder, comprising additionally an affixed stem section having a longitudinal smoke channel therein. The smoking holder is provided in a preferred modification and an optional modification. The construction and operation of the two modifications are identical with the exception that the optional modification has a perforated side wall which is formed above the charge housing seat which substantially encompasses the charge housing in a spaced relationship. The principal features of the invention are that the porous and absorbent paper section which surrounds the burning tobacco charge does not burn and that it allows air filtration which improves the combustion of the tobacco charge and absorbs moisture therefrom which subsequently evaporates thus resulting in a drier and cooler smoke than that which is produced by conventional tobacco smoking pipes.

3,834,400
AWNING CONSTRUCTION

James L. Sattler, Big Rapids, Mich., assignor to Wildwood Products, Inc., Lookout Mountain, Tenn.

Filed Mar. 29, 1972, Ser. No. 239,299
Int. Cl. E04f *10/00*
U.S. Cl. 131—5 AT 6 Claims



An awning construction for travel vehicles and the like in which an awning fabric is secured at one end to the vehicle and is supported at its outer end by a frame including an end bar to which the outer portion of the fabric is attached and side arms to which the end bar is rotatably attached. The lower ends of the side bars are attached for slidable movement to the side of the vehicle or can be disposed vertically and secured to a helical spring stake for supporting the outer end of the awning. Spring loaded and extendable rafters extend from the vehicle beneath the fabric and engage the end bar in locking relationship thereto to prevent rotational movement of the end bar with respect to the rafters. The fabric is attached to the end bar by a special clamp and the lower front portion of the end bar so that the awning fabric is drawn taut around the top and front side of the end bar. The slidable mounting for the side bars is secured to the vehicle through a channel bracket which is securely fastened to the vehicle and which distributes the force from the side bars along the side of the vehicle.

3,834,401
NOVELTY SMOKER'S PIPE

Mark L. Wilson, 18102 N.E. 25th Pl., Miami, Fla. 33160

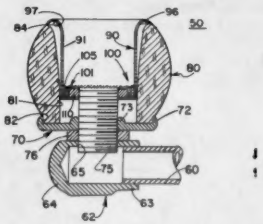
Filed Jan. 30, 1973, Ser. No. 328,131
Int. Cl. A24f *13/12, 13/22*
U.S. Cl. 131—178 3 Claims

A novelty smoker's pipe in the form of a fanciful anima characterized by a substantially spherical body member comprising the torso and head of the animal, a pipe bowl projecting from the head end of the body member and constituting the nose or snout of the animal, a compoundly curved tube extending outwardly of the opposite end of the body and constituting the tail of the animal, and hook members extending downwardly of the underside of the body member and constituting the legs of the animal. In a preferred form of the invention, the body member is comprised of a hollow coconut shell, longitudinally divided to provide two shell halves secured together at the bottom by a hinge to permit opening thereof for use as a receptacle. A length of flexible tubing within the coconut shell and communicating between the pipe bowl and the tubular tail provides for the drawing of smoke from lighted tobacco in the pipe bowl through the outer end of the tail-piece in smoking.

3,834,402
SMOKING PIPE

Dennis D. Paul, 6129 N. Paulina, Chicago, Ill. 60660

Filed Aug. 27, 1973, Ser. No. 391,826
Int. Cl. A24f *05/08*
U.S. Cl. 131—205 7 Claims



A smoking pipe having a cork bowl with a metal insert to provide a decorative appearance which is also an insulator preventing the bowl from becoming hot to the touch. A removable support on the inside of the bowl supports and filters tobacco and the like smoked in the pipe and is held in place between a ring and an internally threaded washer which is mounted on a hollow threaded connector which also holds a threaded bowl mounting plate and a threaded spacer washer thereon and is connected to a threaded opening in the adjacent end portion of the stem. The metal insert protects the cork bowl from combustion.

3,834,403
WIG CONSTRUCTION

Byong Kwon Ahn, Corona, N.Y., assignor to Bando America, Inc., New York, N.Y.

Filed Nov. 17, 1971, Ser. No. 199,528
Int. Cl. A41g *3/00*
U.S. Cl. 132—53 10 Claims

A wig construction in which spaced points of adjacent strips of wefting are joined together at points of attachment offset from strip to strip to form a wefting network expandable to conform to the wearer's head. The periphery of the wefting network is attached to fabric which includes a cap band and may include a section of a cap.

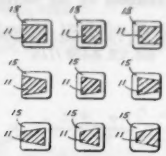
3,834,404
DENTAL FLOSS HOLDER APPARATUS

Chiu-Ying Wong Chien, 4629 Creekbend, Houston, Tex. 77035

Filed July 13, 1973, Ser. No. 378,985
Int. Cl. A61c *15/00*
U.S. Cl. 132—91 4 Claims

An illustrative embodiment of the present invention includes a dental floss holding apparatus having a novel and efficient means for attaching dental floss between a pair of spaced

apart arm members which hold the length of floss disposed therebetween in a taut condition. If the floss is broken during

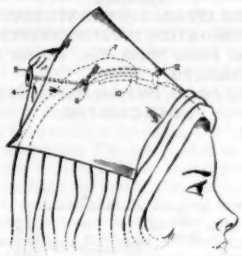


usage, the short broken portion may be quickly and easily discarded and the novel floss attaching means utilized to rapidly recondition the floss holder for continued usage.

3,834,405
NURSE'S CAP ATTACHMENT SYSTEM

Carolyn Creel McCord, Mobile, Ala.

Continuation-in-part of Ser. No. 115,638, Feb. 26, 1971, abandoned. This application Aug. 10, 1972, Ser. No. 279,326
Int. Cl. A42b *7/00*
U.S. Cl. 132—101 **6 Claims**



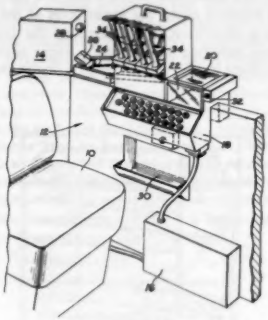
A cap attachment system for easily but securely attaching a standard nurse's cap to the head of the nurse including a plastic comb attachment having a series of odd-numbered, asymmetrically disposed, staggered tines with rounded points and a flat undersurface and having a pin clasp for attaching the comb to the front of cap, the comb attachment being further secured to the cap at its rear, upper portion by means of a rubber band disposed between the button on the cap through the standard slit in the cap to an optional groove at the end of the central tine, all of which when placed in position securely attaches the cap to the head of the wearer. A bobby pin is further included near the rubber band's attachment to the tine to insure that the tension of the rubber band does not pull the end of the comb away from the head of the wearer.

3,834,406
TICKET SYSTEMS

Alec Patrick James, Birmingham, England, assignor to National Research Development Corporation, London, England

Filed Jan. 29, 1973, Ser. No. 327,290
Claims priority, application Great Britain, Feb. 16, 1972, 7054/72; Mar. 1, 1972, 9515/72
Int. Cl. G07d *1/06*
U.S. Cl. 133—2 **10 Claims**

The invention provides change dispensers, each for dispensing coins of a different value, connected logically to switches, each for setting up the value of tickets required to be issued, and possibly also for causing issue of such tickets, and to further switches, each for setting up the value of monies tendered, so that by operating one appropriate switch from

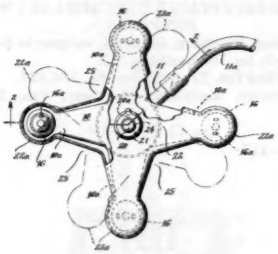


each series of switches, the correct change (if any) is issued without any mental arithmetic on the part of the operator.

3,834,407
MILKING UNIT WASHER

Richard G. Heitman, Rhinebeck, N.Y., assignor to The DeLaval Separator Company, Poughkeepsie, N.Y.

Filed May 14, 1973, Ser. No. 359,629
Int. Cl. B08b *9/00, 11/02*
U.S. Cl. 134—56 R **4 Claims**



The teat cups are applied to outlets of a washer unit from which a cleaning liquid is sucked through the liners of the teat cups to a vacuum source. Upon removal of the teat cups from these outlets, a cover of the washer unit automatically descends from a washing position with a rotating movement to cover the outlets; and to prepare for the next washing operation, the cover is lifted and rotated to its washing position, where it is held by the teat cups when re-applied to the outlets.

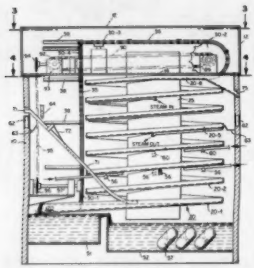
3,834,408
APPARATUS FOR CLEANING SMALL ITEMS

Richard E. Thalacker, Bowling Green, Ky., assignor to Detrex Chemical Industries, Inc., Detroit, Mich.

Filed Sept. 13, 1972, Ser. No. 288,685
Int. Cl. B08b *3/02, 3/10;* **B65g** *19/00*
U.S. Cl. 134—83 **7 Claims**

Compact apparatus for cleaning electronic, and other small items of manufacture, of soils, such as those which result from prior manufacturing operations, includes a helical non-vibratory elevator track, which is wound upwardly about a cylindrical supporting stem, and an endless chain conveyor for pushing the items along the track. The soiled items are deposited into a load chute leading down to a lower flight of the track.

This portion of the track is submerged, or partially submerged, in a cleaning solution which is flowing down the track into a lower sump. The immersed soiled items are pushed through the cleaning solution along the lower level of the track, and, after emerging therefrom, are pushed up the track through sprays of clean distillate solvent and a vapor zone located at intermediate flight levels, then through a drying zone at upper



flight levels, after which the cleaned and dried items are discharged from the track down a discharge chute. The conveyor for conveying the items up the helical elevator track may preferably include an endless chain having fixtures or pushers extending laterally therefrom at spaced intervals for pushing the items along the track. The helical track and its chain conveyor occupy but a small amount of floor space and the entire cleaning system is housed in a compact housing.

3,834,409

CLEANSING RECEPTACLE FOR CAPILLARY WRITING PEN PARTS

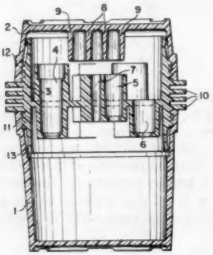
Lasse Kuparinen, Hamburg, Germany, assignor to Koh-I-Noor Rapidograph, Inc., Bloomsbury, N.J.

Filed Feb. 22, 1973, Ser. No. 334,827

Claims priority, application Germany, Feb. 25, 1972, 7207146

Int. Cl. B08b *3/04*

U.S. Cl. 134—117 **9 Claims**



A closed reservoir of the type used for cleansing capillary pen parts so as to remove dried ink and the like. The receptacle includes a base reservoir containing the cleansing liquid, an intermediate support platform complementally engagable with the reservoir and including a plurality of sleeves conformed to the exterior configuration of the several pen parts, for example cap, reservoir, writing tip; and a cover which closes the reservoir and support. The receptacle is distinguished in that the cover holds the pen parts in place during shaking so as to agitate the cleansing liquid, yet the intermediate platform may be removed from reservoir and cover and supported independently for washing or drying.

3,834,410

COLLAPSIBLE TENT

Norman P. Leibel, Pottsville, Pa., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 27, 1973, Ser. No. 298,705

Int. Cl. A45f *1/16*

U.S. Cl. 135—3 E **4 Claims**

A tent comprising a two-piece collapsible frame consisting of spring-loaded sections which are automatically connected on the unrolling of the tent.

3,834,411

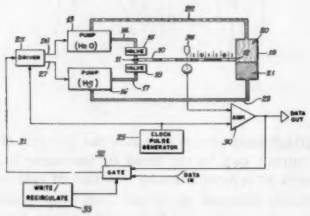
METHOD AND APPARATUS FOR STORING DIGITAL INFORMATION IN FLUID MEDIUM

Alan Richardson Jones, Miami, Fla., assignor to Dade Reagents, Inc., Miami, Fla.

Filed July 15, 1968, Ser. No. 745,029

Int. Cl. G06d *1/00*

U.S. Cl. 137—1 **15 Claims**



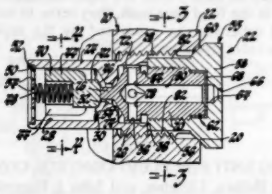
A fluidic memory system which is compatible with conventional fluidic logic elements includes a number of pumps for selectively introducing quanta or segments of any of a plurality of fluids into the input end of a storage tube in response to a digital input signal. The different fluids are generally immiscible as used in the system and are distinguishable from each other by characteristic and detectable differences in a physical property, each fluid being representative of a discrete data level of the input signal. A pattern of fluid quanta is thus formed in sequential relation in the tube to provide a "permanent" or "non-volatile" representation of the input signal. The fluids remain separate, although adjacent quanta are contiguous, as they are advanced through the tube. As the fluid pattern is transmitted along the tube the selected physical characteristics of the fluid quanta or segments is sensed by a detector and signals are generated which correspond with the data level of each fluid being sensed. The signal pattern may then be recirculated, or a new pattern may be introduced into the memory tube. Fluids discharged at the output end of the tube may be separated and returned to their respective pumps. Modifications including a scanning system for reading the data at a faster rate then the propagation rate of the individual quanta are also described.

3,834,412

COMBINED FILL, PRESSURE RELIEF AND BLEED VALVE ASSEMBLY FOR PRESSURE VESSELS

Wayne V. Fannin, Xenia, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed June 25, 1973, Ser. No. 373,389
Int. Cl. F16k *17/16, 45/00*
U.S. Cl. 137—68 5 Claims



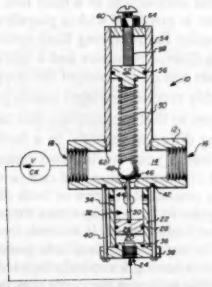
A combined fill, pressure relief, and bleed valve assembly for pressure vessels includes a valve portion having a valve housing threaded within a threaded bore in the wall of the pressure vessel and mounting a valve member biased to closed position against a valve seat of the housing. The valve member can be unseated to conventionally fill the pressure vessel. A pressure relief and bleed portion includes a second housing having a hollow body threaded exteriorly and interiorly and a head provided with an outlet. A plurality of bleed grooves on the exterior of the body open to the inner end of the body and to the head. A hollow plug is threaded within the body and seats a pressure rupturable diaphragm against the inner surface of the head to close the outlet. The body is threaded into the bore after filling. The inner end of the body seats on the valve housing to close the inner ends of the bleed grooves and the head seats on the wall to close the outer ends of the bleed grooves. An extension of the plug unseats the valve member to permit pressure fluid to flow through the plug to the pressure rupturable diaphgram. A partial unthreading of the body insufficient to disengage the extension from the valve member unseats the inner end of the housing from the valve housing and the head from the pressure vessel wall to permit the bleed grooves to bleed pressure fluid to atmosphere.

3,834,413

UNIVERSAL HIGH PRESSURE REGULATOR

Fred M. Peterson, 3233 Caddo Tr., Fort Worth, Tex. 76135

Filed Dec. 11, 1972, Ser. No. 313,685
Int. Cl. F04b *49/08*
U.S. Cl. 137—116 2 Claims



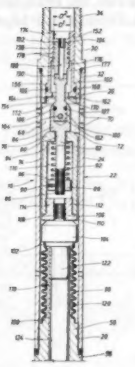
A universal high pressure air regulator which functions as a two stage constant running unloader and regulator when used in conjunction with a check valve, an excess air release and regulator where no check valve is employed, or a safety valve, accomplished through the action of a valve seal adjustably spring biased in a closed condition and responsive to a pressure actuated cylinder, so that at a predetermined pressure the cylinder causes sufficient pressure to be applied against the valve to just overcome the combined spring biasing means and air pressure acting upon the valve which is exposed to the compressor airstream, thus preventing full unloading and permitting a balanced condition wherein only the air being used is replaced, excess air being discharged, i.e., only the peak of the pressure pulse is used or goes into the tank; when air usage from the receiver is ended the air pressure on one side of the valve overcomes both the spring and air pressure on the other side of the valve at the air pulse low cycle, dumping all the air pressure in the line until receiver air is again used, at which time the valve closes starting the cycle again.

3,834,414

METHOD AND APPARATUS FOR GAS-LIFT PRODUCTION OF LIQUID FROM WELLS

Everett D. McMurry, Houston, Tex., assignor to McMurry Oil Tools, Inc., Houston, Tex.

Filed Aug. 29, 1972, Ser. No. 284,590
Int. Cl. F04f *1/08*
U.S. Cl. 137—155 15 Claims



Method and apparatus for gas-lift production of fluid from wells and including a bellows controlled pressure differential responsive gas-lift valve mechanism incorporating a choke structure. The choke may be calibrated for the particular flow rate of the production zone to which the gas-lift valve mechanism is related, in order to provide the valve mechanism with optimum gas-lift capability without allowing any one valve mechanism to use excessive gas and thereby rob other gas-lift valves of sufficient gas for proper operation thereof.

3,834,415

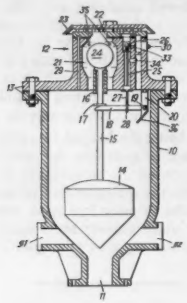
SEWERAGE AIR RELEASE VALVE

Keith Roderick Herron, Queensland, Australia, assignor to James Kemp & Co. Pty. Ltd., Queensland, Australia

Filed Jan. 31, 1973, Ser. No. 328,286
Int. Cl. F16k *31/18*
U.S. Cl. 137—202 5 Claims

A sewerage air release valve includes a float-and-ball closed

vent orifice, a high pressure gas release valve and valve control means to open said high pressure valve on downward



movement of the float. All operating parts are mounted on the release valve top cap for easy replacement and maintenance.

3,834,416

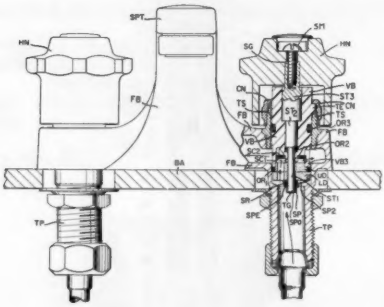
CERAMIC DISC FAUCET VALVE

Richard G. Parkison, Somerville, N.J., assignor to American Standard Inc., New York, N.Y.

Continuation-in-part of Ser. No. 244,503, April 17, 1972,. This application Feb. 26, 1973, Ser. No. 335,616

Int. Cl. F16k 5/04, 5/18, 47/14

U.S. Cl. 137—550 **11 Claims**



This application discloses a valve structure for controlling the flow of a fluid, such as water, to be delivered from a faucet. The valve structure includes a housing having a tapered inner wall shaped to have a central cylindrical opening for receiving and guiding a rotatable longitudinal stem. Two ceramic discs mounted about the stem and in intimate contact with each other are arranged so that the upper disc is held stationary against motion about and along the stem, while the lower disc is coupled to the stem to rotate with the stem without introducing any rotation of the upper disc. The coupling of the lower disc to the stem is achieved by a spider member having an opening to receive and grip a tang at the base of the stem. The spider member also has extended arms which reach to about the periphery of the lower disc and cause the lower disc to follow any rotary movement of the stem. The spider member also applies spring pressure against the under surface of the lower disc to hold it in contact with the upper disc. Each of the ceramic discs has a plurality of ports through which the fluid flows when the ports of the lower disc are in alignment with those of the upper disc but, when the stem is rotated to dis-align the ports of the two discs and eliminate any overlap between the ports of the two discs, the fluid flow will be stopped. The contiguous surfaces of the two discs are very smooth and flat to prevent leakage of fluid between the discs and additionally to minimize friction and drag. A handle may be affixed to the top of the stem to control the rotary motion of the stem. Screens may be positioned above the upper disc and they may be held within the tapered wall of the housing and, being in the fluid flow path, they serve to minimize noise that would otherwise be generated by the rapid fluid flow through the valve structure.

3,834,417

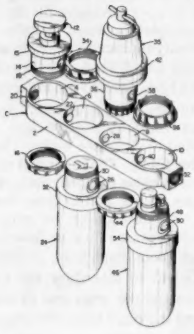
COUPLING UNIT FOR FLUID CONTROL COMPONENTS

Clair Dean Holben, Littleton, and John J. Humphrey, Denver, both of Colo., assignors to C. A. Norgren Co., Littleton, Colo.

Filed Apr. 10, 1972, Ser. No. 242,381

Int. Cl. F17d 1/00

U.S. Cl. 137—613 **14 Claims**



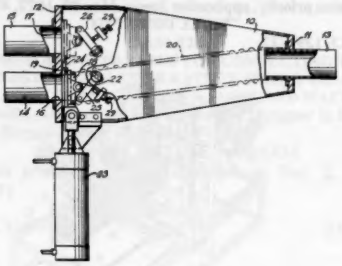
A coupling unit is provided for removably connecting a fluid control component in a fluid supply line. The coupling unit includes a member for supporting at least one such component and includes an aperture through which the component extends and in which it is held in fluid-tight relationsip with the inlet and outlet thereof being in communication with passageways extending from the aperture to an inlet and outlet of the member for connection in a fluid line. In one embodiment the member is provided with a plurality of apertures in fluid communication for receiving fluid control components, such as a valve, a filter, a regulator and a lubricator connected in series. The inlet and outlet ends of the coupling unit can be made to removably receive threaded inserts provided with different thread types so that the coupling unit can be attached to fluid lines having different threads. In a further embodiment the unit comprises a yoke having two opposed open-ended portions in fluid communication and one or more mating elements which are attachable to one or both of the open-ended portions of the yoke to form an aperture through which a fluid control component can extend. If desired, the side walls of the apertures may be tapered to facilitate positioning the fluid control component having a similarly tapered body. The portion of the aperture adjacent the ports may be formed as flats which cooperate with a similar flat on the fluid control component so that one flat engages a seal on the other flat to form a fluid tight juncture.

3,834,418

CONTROL VALVE

James Roger Clancy, Stockport, England, assignor to Henry Simon Limited, Stockport, Cheshire, England

Filed May 18, 1973, Ser. No. 361,448
Claims priority, application Great Britain, June 21, 1972, 29179/72
Int. Cl. F16k 11/06
U.S. Cl. 137—625.48 15 Claims



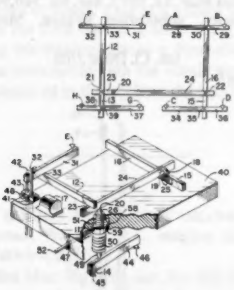
A fluid flow control valve of the kind having a single port which is to be connected selectively to one or other of a pair of ports, said valve comprising a ported member connected to said single port by a flexible duct, said member being movable between two positions thus to be aligned with one or other of said pair of ports, means being provided for effecting automatically a seal between said member and a respective one of said ports when said alignment takes place, said member being movable preferably linearly across a surface containing said pair of ports, and said sealing means is arranged to force the member against said surface as it approaches alignment with said port.

3,834,419

DIGITAL COUNTERPOSING ACTUATORS

Edward Bozoyan, 1812 West St., Union City, N.J. 07087

Division of Ser. No. 58,500, July 27, 1970, Pat. No. 3,686,970. This application Aug. 28, 1972, Ser. No. 284,419
Int. Cl. F16k 11/00
U.S. Cl. 137—625.63 12 Claims



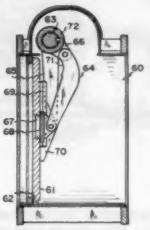
A digital actuator comprising a combination of small lever arms in conjunction with a series of on/off torque motors constructed and arranged to reduce the stroke ratings of motors to binary-weighted displacements and add them up to one another; a hydraulically controlled modified sliding spool valve having a shift arm and positional bellows at each end; a control pressure bellows to receive the total of binary-weighted displacements and proportionally shift the spool by means of one of its shift arms via either positioner bellows.

3,834,420

THREE LEVER VALVE WITH RELIEF PORT

Harry P. Finke, Pittsburgh; Hugh B. Carr, Coraopolis, and Carl D. Wilson, McMurray, all of Pa., assignors to Bloom Engineering Company, Inc., Pittsburgh, Pa.

Division of Ser. No. 296,823, Oct. 12, 1972, Pat. No. 3,804,124. This application Oct. 29, 1973, Ser. No. 410,827
Int. Cl. F16k 1/20
U.S. Cl. 137—630.12 3 Claims



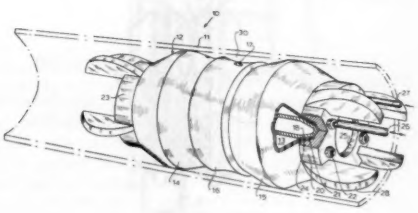
The valve includes a housing having an opening therethrough, a valve seat positioned about the opening and a valve disc positioned within the opening to engage the valve seat. The valve disc is operated through three levers which parallel move the valve disc from the valve seat initially and then rotate the disc through 90°. A relief port is positioned within the valve disc and a closure means for the relief port is connected to the central lever so that the relief port is opened prior to the opening of the valve disc.

3,834,421

PACKER FOR SEALING PIPE LEAKS

Daniel R. Daley, Orlando, Fla., assignor to Penetryn Products, Inc., Orlando, Fla.

Filed Oct. 25, 1972, Ser. No. 300,498
Int. Cl. F16d 55/12
U.S. Cl. 138—97 6 Claims



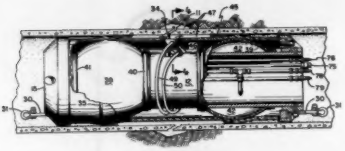
A packer apparatus for the internal sealing of pipe leaks has a cylindrical casing with a single inflatable sleeve thereon sealed at each end to the casing so that the sleeve may be inflated by the application of air under pressure between the cylindrical casing and the sleeve. The sleeve has a thickened middle portion so that the end portions inflate more rapidly so that when placed in a pipe and inflated, the end portions will form a void area in the middle portion with the walls of the pipe. An air line is connected through the casing for applying air under pressure and a grouting line passes through the casing and through the middle portion of the inflatable sleeve and is attached to the sleeve for applying grouting chemicals to the void area created during the inflation of the sleeve. The grouting line has a flexible portion between the casing and the sleeve to allow the expansion of the inflatable sleeve and skids provided for the packer to ride on when the sleeve is deflated.

3,834,422

SEWER REPAIR APPARATUS

Richard E. Larson, Minnetonka, Minn., assignor to Cherne Industrial, Inc., Edina, Minn.

Filed Jan. 19, 1973, Ser. No. 325,020
Int. Cl. F16l *55/18*
U.S. Cl. 138—97 **13 Claims**



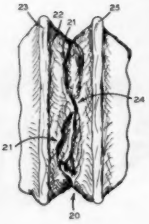
A sewer repair apparatus for internally repairing leaks in sewer pipes and the like which includes a single grouting sleeve adapted for engagement with the inside surface of the pipe to be repaired, means for selectively expanding portions of the grouting sleeve to define a grouting chamber and to force grouting material into the portion of the pipe which leaks and means for introducing grouting material into said grouting chamber.

3,834,423

CONTRACTILE-EXTENSIBLE CONDUIT AND METHOD OF MAKING SAME

Arthur M. Elson, Trenton, N.J., assignor to Acme-Hamilton Manufacturing Corporation, Trenton, N.J.

Filed May 30, 1972, Ser. No. 257,919
Int. Cl. F16l *11/08*
U.S. Cl. 138—122 **5 Claims**



A flexible conduit having a helical wire reinforcement embedded in the wall thereof; the reinforcement being of a character to normally place the conduit in its axially contractile condition, yet permitting axial extension as required and restoration to its contractile condition; together with a method of making such a conduit. The convolutions of the helical wire reinforcement being under torsional stress whereby the conduit in its contractile state has pleat forming wall portions between successive helical convolutions of the reinforcement; such pleat forming wall portions tending to extend radially inward despite repeated alternate extension and contraction of the conduit.

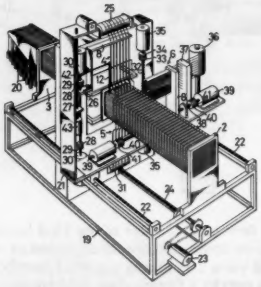
The conduit is formed by disposing inner and outer wall portions of elastomeric material on a mandrel with an interposed helical wire winding therebetween; the winding being applied over the inner wall portion in an axially stretched condition while the winding is subjected to torsional forces.

3,834,424

THREE-DIMENSIONAL FABRIC, AND METHOD AND LOOM CONSTRUCTION FOR THE PRODUCTION THEREOF

Kenji Fukuta, Yokohama; Yoshihiro Nagatsuka, Yokosuke; Shigeo Tsuburaya; Rihei Miyashita; Juniti Sekiguti, all of Yokohama; Eiji Aoki, Tokyo, and Motoe Sasahara, Yokohama, all of Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan

Filed Mar. 19, 1973, Ser. No. 342,602
Claims priority, application Japan, May 19, 1972, 47-50023
Int. Cl. D03d *47/04*
U.S. Cl. 139—22 **6 Claims**



Method of weaving a three-dimensional fabric which comprises the steps of inserting a number of doubled weft yarns between the layers of the warp yarns, securing the loops which connect the weft yarns by means of a binder yarn threaded therethrough, inserting vertical yarns between the vertical rows of warp yarns perpendicularly to the weft and warp yarns, and after repeating the first two steps beating the woven yarn with a reed. A loom for carrying out this process is also disclosed.

3,834,425

DOUBLE HOOKS FOR DOUBLE-LIFT OPEN-SHED JACQUARD

Rene Neyraud, Saint-Cyr-Au-Mont-D'Or, France, assignor to Verdol S.A., Lyon, France

Filed Mar. 13, 1973, Ser. No. 340,905
Claims priority, application France, Mar. 27, 1972, 72.11156
Int. Cl. D03c *3/08*
U.S. Cl. 139—65 **6 Claims**

In a double hook for a double-lift open-shed jacquard, of the kind formed of a steel wire bent to U-shape to determine

two parallel branches each carrying one of the main beaks of the hook while one branch has an open-shed catch welded thereto, this catch is welded to the branch along at least one of the two lateral generatrices thereof in order that the weld or welds may be situated substantially in the neutral plane of the branch with respect to the deflections to which it is submitted in operation. This avoids wire breakages due to the fatigue of the steel resulting from the repeated stresses which tend to concentrate around the weld when same is effected along a generatrix situated in the longitudinal plane of the hook, i.e. in the plane of flexion thereof.

3,834,426

METHOD AND APPARATUS FOR CONNECTING THE ONE ENDS OF HEDDLES OR RATHER SPRING TIE-RODS TO ELASTIC DRAW CORDS IN A JACQUARD MACHINE

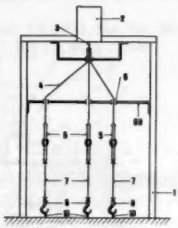
Otto Muller, Uetikon am See, Switzerland, assignor to Staubli Ltd., Horgen-Zurich, Switzerland

Filed Nov. 30, 1972, Ser. No. 310,814

Claims priority, application Switzerland, Dec. 2, 1971, 17515/71

Int. Cl. D03c *3/40, 3/44*

U.S. Cl. 139—85 **8 Claims**



A method and apparatus for connecting the ends of heddles and of spring tie-rods to elastic draw cords in a Jacquard machine. The elastic cord material is clamped into a tight engagement with the bent portion of a heddle. The apparatus utilized for accomplishing this connection is a roller mechanism having a cord brake and two fixed guide rollers which are arranged so that they are spaced from one another. A movable guide roller is arranged between the fixed guide rollers and serves to supply cord at a known tension and at a fixed length to the cord clamping and cutting mechanism. A heddle-holding mechanism places a hook-shaped end of a heddle in close association with the elastic cord. The cord is subsequently received in the hook on the heddle and clamped therein.

3,834,427

BOBBIN ALIGNMENT MEANS

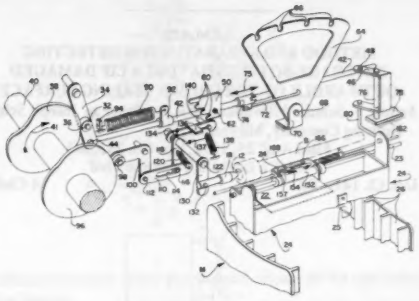
Robert E. Morton, Warwick, R.I., assignor to Leesona Corporation, Warwick, R.I.

Filed Mar. 20, 1973, Ser. No. 342,977

Int. Cl. D03j *1/12*

U.S. Cl. 139—224 A **5 Claims**

The instant invention relates to a bobbin alignment mechanism for use with bobbin handling equipment such as a bobbin winding machine. The alignment mechanism includes a plurality of alignment gates situated within the guideways of, say, a bobbin magazine to sequentially align the bobbin in the correct attitude within the magazine. The plurality of gates are sequentially movable from a bobbin holding position. Release of a downstream gate is actuated by movement of an upstream gate to its bobbin holding position under the weight of a bobbin supplied by a distribution chute above the upstream gate. Means are included on the distribution chute to release a holding catch engaging the upstream gate to release said upstream



gate to its released position and thereby release of a bobbin to the downstream gate as the distribution chute is pivoted across the cells of said magazine.

3,834,428

MOVABLY DISPLACEABLE RETURN GAS PIPE IN A COUNTER PRESSURE FILLING MACHINE

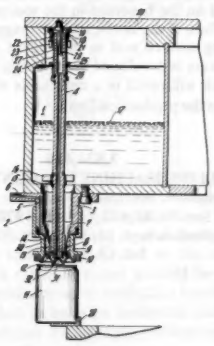
Friedrich Rademacher, Kamen-Sudkamen, Germany, assignor to Holstein & Kappert Maschinenfabrik Phonix GmbH, Dortmund, Germany

Filed Jan. 15, 1973, Ser. No. 323,640

Claims priority, application Germany, Jan. 19, 1972, 2202292

Int. Cl. B65b *31/04*

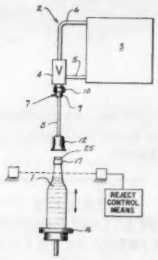
U.S. Cl. 141—39 **8 Claims**



In a counter pressure filling machine including a liquid-gas chamber divided by a liquid level into a liquid space and a superposed pressurized gas space, a filling machine which does not use a filling tube communicates with the liquid space for filling a vessel. An axially displaceable gas return pipe extends through the filling member so that its outlet end communicates with the vessel to be filled and its opposite end is located within the gas space in the liquid-gas chamber. A cylinder of variable volume is connected to the end of the gas return pipe within the gas space. The cylinder includes at least one channel which can be opened and closed for admitting flow from the gas space into the gas return pipe. When a vessel is not being filled by the machine, the gas return pipe and the cylinder are sealed from the gas space and the interior of the gas space is maintained at atmospheric pressure. The liquid outlet part from the filling member is closed by a seal member

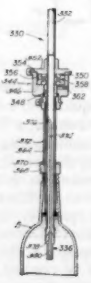
mounted on the gas return pipe. During filling, when the pressure within the gas space and within the gas return pipe is equalized, the gas return pipe along with the seal member are axially displaced so that the liquid outlet part is opened.

3,834,429
METHOD AND APPARATUS FOR DETECTING BEVERAGE BOTTLES HAVING A LIP DAMAGED OUTWARDLY OF THE CROWN SEALING SURFACE
Arthur F. Schulz, Milwaukee, Wis., assignor to Joseph Schlitz Brewing Company, Milwaukee, Wis.
Filed Aug. 25, 1972, Ser. No. 283,803
Int. Cl. B07b *13/18*; B65b *1/48*
U.S. Cl. 141—83 **4 Claims**



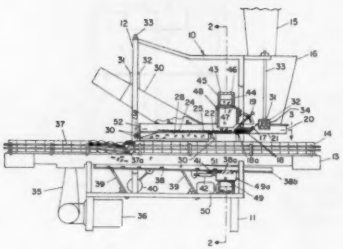
Method and apparatus are disclosed for the detection of beverage bottles having a lip damaged outwardly of the crown sealing surface. Such detection is provided for in conjunction with the bottle filling operation wherein the filling apparatus seals on the bottle lip outwardly of the crown sealing surface and the bottle is then subjected to a counter pressure. If the counter pressure developed in the bottle is less than the pressure imposed on the beverage in the source reservoir, a short fill results. Thus, if the bottle lip is damaged outwardly of the crown sealing surface and in the region of sealing, a lesser counter pressure is developed in the bottle due to leakage past the seal which will result in a detectable short fill and can be rejected from the production line.

3,834,430
FILLING MACHINE FOR CONTAINERS
Paul R. Fechheimer, Worcester, Mass.
Division of Ser. No. 85,442, Oct. 30, 1970, abandoned. This application Sept. 11, 1972, Ser. No. 287,805
Int. Cl. B65b *3/24*
U.S. Cl. 141—119 **1 Claim**



A filling nozzle for effecting the controlled filling of a container such as a bottle with liquid and which includes a center filling tube or stem for directing liquid into the container and an outer sleeve-like element for controlling the opening and closing of the filling tube and defining an annular passage around the filling tube to enable air or other container gas to escape from the container during the filling operation. According to the invention, the sleeve-like element is maintained under a vacuum and a liquid draw-back tube is mounted axially within the lower end of the filling tube to communicate the container with the gas escape passage following the termination of the main filling flow of liquid thereto for the purpose of dropping the liquid level in the container to an exact, predetermined final position.

3,834,431
CONTAINER FILLING APPARATUS
David R. Zittel, Columbus, and Fortunato Ajero, South Milwaukee, both of Wis., assignors to Hughes Company Inc., Columbus, Wis.
Filed May 3, 1973, Ser. No. 356,939
Int. Cl. B65b *1/08*
U.S. Cl. 141—131 **7 Claims**

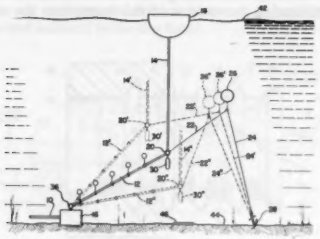


Apparatus for continuously filling containers with particulate material. The apparatus has a vibratory feeder pan with a longitudinally elongated feed slot. The slot is formed by the spaced lower edges of a pair of transversely inclined lower feed surfaces. A horizontal upper feed surface has a pair of diverging diagonal distributing edges which each overlie one of the lower feed surfaces. Particulate material is distributed along the length of the lower feed surfaces by the distributing edges and directed through the feed slot by the lower feed surfaces in a longitudinally uniform manner when the feeder pan is longitudinally vibrated.

3,834,432
TRANSFER SYSTEM FOR SUBOCEANIC OIL PRODUCTION
Herbert J. Lilly, Jr., Mission Viejo, and George W. Morgan, Anaheim, both of Calif., assignors to Subsea Equipment Associates Limited, Hamilton, Bermuda
Filed Sept. 11, 1969, Ser. No. 857,108
Int. Cl. B65b *1/04*
U.S. Cl. 141—388 **5 Claims**

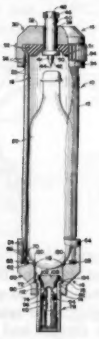
A transfer system for offshore petroleum production has a vertically movable riser extending from a collection tank on the ocean floor to a storage tanker on the ocean surface. The riser is releasably attachable by a pivotal connection to the tanker during flowing operation and disconnectable during storms or otherwise violent sea states. In the disconnected mode, the riser remains submerged under the ocean surface to avoid excessive structural loading. The riser is articulated and

moored by a system of weights and floats to maintain tension within acceptable stress limits throughout a wide range of



changes in vertical and some horizontal movement of the tanker.

3,834,433
CARTRIDGE-ACTUATED DEVICE FOR INFLATING TIRES AND THE LIKE
Arnold M. Thompson, Box 1722 Gary Ave., Wheaton, Ill. 60090
Filed Nov. 22, 1971, Ser. No. 201,051
Int. Cl. B60c *23/00*
U.S. Cl. 141—392 **2 Claims**



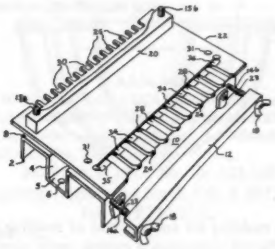
A small cartridge-actuated device adapted to inflate tires and other articles and embodying a sealed container in which a removable CO_2 type cartridge is punctured by an impact plunger at one end of the container to thus fill the container with pressurized gas which may be applied to the valve stem of a tire by a valve-equipped fitting at the other end of the container.

3,834,434
PORTABLE CUTTING DEVICE
Harold L. Walsh, 802 N. Park Ave., Park Rapids, Minn. 56470
Filed Mar. 23, 1973, Ser. No. 344,254
Int. Cl. A01g *23/08*
U.S. Cl. 144—34 E **3 Claims**

A portable cutting device includes a support structure provided with straps to permit mounting of the support structure on the back of a user, and the supporting structure also has a pump, reservoir and engine mounted thereon. An elongate hollow handle has a mounting plate at one end thereof which is connected to a cutting blade, and an operating valve is mounted on the other end of the handle. The cylinder and piston unit is connected to the blade and mounting plate, and the piston is provided with a valve therein which is operable to

facilitate retraction of the piston upon release of the operating valve handle.

3,834,435
DOVETAIL FIXTURE
Wilfred M. McCord, Jr., Louisville, Ky., assignor to Vermont American Corporation, Louisville, Ky.
Division of Ser. No. 275,303, July 26, 1972. This application Oct. 15, 1973, Ser. No. 406,298
Int. Cl. B27f *1/08*
U.S. Cl. 144—144.5 **5 Claims**

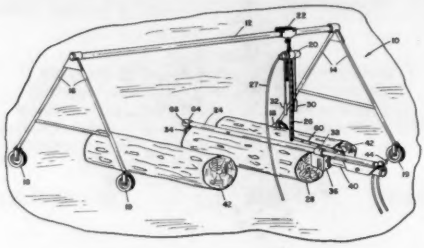


This invention is concerned with dovetail fixtures for clamping and holding orthogonally disposed workpieces and for guiding a cutting tool. A slotted guide member in the form of a comb or template is held against one of the workpieces to guide a router or similar cutting tool as the bit traces the dovetail pattern. A different cutter guiding template is employed herein. In addition novel workpiece locating members are movably attached to both the horizontal and the vertical work-receiving surfaces for spacing workpieces relative to each other during cutting.

3,834,436
PORTABLE OVERHEAD POST AND RAIL SPLITTER
Jamie L. Burkett, P.O. Box 366, Pilot Hill, Calif. 95664
Filed Sept. 13, 1973, Ser. No. 397,044
Int. Cl. B27c *9/02*
U.S. Cl. 144—326 R **12 Claims**

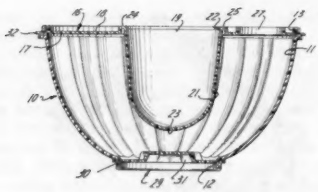
Apparatus which can be used to split logs lying on the ground into posts and rails of a desired size is disclosed. The apparatus includes an overhead track mounted on a mobile carriage. A horizontal beam is suspended from a hoist which moves along the overhead track so that the beam can be lowered into position over a particular log to be split. The beam has a depending plate near one end and a depending blade near the other end so that the log to be split is disposed between the plate and the blade. The blade is attached to a

sleeve which fits over the beam so that the blade can slide along the beam. A hydraulic actuator is used to force the



blade into the log while the plate prevents movement of the log to split the log along the grain thereof.

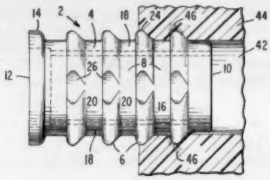
3,834,437
MOLD FOR INGESTIBLE SUBSTANCES
James P. Swett, and Harold P. Ashton, both of Providence, R.I.
Division of Ser. No. 91,147, Nov. 19, 1970, Pat. No. 3,700,204.
This application Aug. 28, 1972, Ser. No. 284,014
Int. Cl. B41b *11/62*
U.S. Cl. 150—.5 **2 Claims**



A reusable molding kit and method of molding ingestible substances. The kit comprises a central mold portion and a multiple seal closure having a depressed portion which is inwardly directed. The central mold portion has smaller and larger end openings either of which can be sealed by the multiple seal closure. The depressed portion in the multiple seal closure causes a hollow well to be formed in the molded substance. The hollow well can be filled with various different substances to give a pleasing appearance. The depressed portion also serves as an additional mold for ingestible substances. A multicolored molded substance may be formed by filling the central mold portion with a moldable substance, filling the depressed portion with a second moldable substance having a different color, hardening the substances, removing the substances and inserting the second substance into the hollow well formed in the first substance.

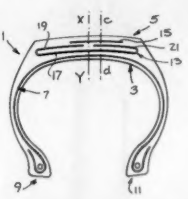
3,834,438
ULTRASONIC INSERTS
Theodore Ziaylek, Jr., Yardley, Pa., assignor to Yardley Products, Yardley, Pa.
Filed Jan. 17, 1973, Ser. No. 324,339
Int. Cl. F16b *39/282*
U.S. Cl. 151—41.73 **1 Claim**

A metal insert adapted to be at least partially embedded in thermoplastic material is provided with a cylindrical body having spaced annular ribs on the outer surface thereof. The ribs have surfaces facing toward the inner end of the insert which are inclined at about 135° with respect to the adjacent surface of the cylindrical body and have opposite radially extending surfaces facing toward the outer end of the insert. The outer extremities of the ribs are rounded so as to eliminate sharp edges or corners contacting the thermoplastic material thereby facilitating movement of the insert into the material



and at the same time reducing the stress and mechanical working of the material under heat and pressure during displacement and flow thereof about and into retaining engagement with the ribs as the insert is embedded in the thermoplastic material.

3,834,439
ASYMMETRIC PNEUMATIC VEHICLE TIRE
Henri J. Mirtain, Compiegne, France, assignor to Uniroyal S.A., Clairoix, France
Filed Jan. 26, 1973, Ser. No. 326,635
Claims priority, application France, Feb. 2, 1972, 72.03478
Int. Cl. B60c *9/18*
U.S. Cl. 152—361 FP **11 Claims**



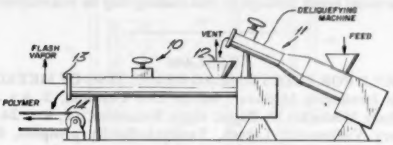
An asymmetric pneumatic vehicle tire is disclosed. The tire includes a carcass, a tread overlying the crown region of the carcass and a tread reinforcing band positioned between the tread and the crown region. The reinforcing band circumferentially surrounds the carcass and includes a rubberized sheet of parallel ply cords which is folded at its sides to provide a first transversely continuous circumferential layer and a second circumferential layer formed by first and second portions and having a circumferential zone of discontinuity. The reinforcing band further includes a circumferential ribbon of rubberized parallel ply cords which is positioned adjacent to the sheet of cords and in the zone of discontinuity. The zone of discontinuity and the ribbon are so positioned that the midpoint between the axis of the zone of discontinuity and the axis of the ribbon is offset from the median equatorial plane of the tire, thereby providing the desired asymmetric tire.

The foregoing abstract is neither intended to define the invention disclosed in this specification, nor is it intended to be limiting as to the scope of the invention in any way.

3,834,440
METHOD FOR DRYING POLYMERIC MATERIALS
Nathan John McCracken, Sarnia, Ontario, Canada, assignor to Polymer Corporation Limited, Sarnia, Ontario, Canada
Filed Sept. 15, 1972, Ser. No. 289,567
Int. Cl. B01d *1/00;* **F26b** *7/00;* **B01d** *1/28*
U.S. Cl. 159—47 R **9 Claims**

An improved extrusion dryer for drying wet polymeric materials comprises a compression zone where the wet materi-

al is compressed and heated and an expansion zone where the compressed hot material is allowed to expand and the volatile liquid to volatilize. The expanded material is conveyed by screw to an unrestricted outlet where it is separated from vapours and isolated in the dry form.



The extrusion dryer of this invention operates at low temperatures and low power consumption and is suitable for drying at high throughput rates elastomeric polymers such as polybutadiene, butyl rubber, as well as heat sensitive polymers.

3,834,441

PROCESS FOR CONCENTRATING POLYMER SOLUTIONS BY EVAPORATION

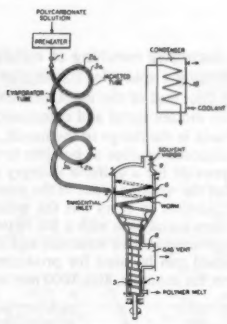
Hugo Vernaleken, Krefeld; Otto Court, Neub; Ludwig Bottenbruch, and Axel Lippert, both of Krefeld-Bockum, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of Ser. No. 27,078, April 9, 1970, abandoned. This application Aug. 7, 1972, Ser. No. 278,693

Claims priority, application Germany, Apr. 25, 1969, 1921045

Int. Cl. B01d *1/22*

U.S. Cl. 159—49 **2 Claims**



Polymer solutions are concentrated by evaporation, whereby the solution is heated under pressure and expanded through a nozzle into a coiled tube in which a decreasing pressure gradient is maintained in direction of flow and the gas velocity is increased and the temperature is raised above the melting temperature of the polymer.

3,834,442

METHOD AND APPARATUS FOR THE PREPARATION OF FOUNDRY MOULDS OR CORES

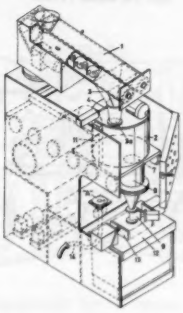
Albert Edwards, Peterborough, England, assignor to Baker Perkins Limited, Peterborough, England

Filed Aug. 18, 1972, Ser. No. 281,751

Int. Cl. B22c *15/24*

U.S. Cl. 164—21 **8 Claims**

A method and apparatus for preparing a foundry mould or core using the cold setting method wherein separate charges of sand and binder mixture on the one hand and sand and catalyst mixture on the other hand are delivered to a mixing chamber in which the separate charges are intermixed to produce a final sand/binder/catalyst mixture. The final mixture is allowed to pass into a communicating blowing chamber and held in the blowing chamber whilst gas under pressure is



admitted into the mixing chamber to purge it and at the same time build up pressure on the final mixture in the blowing chamber. When the pressure on the final mixture has reached a suitable blowing level, the communication between the blowing chamber and the mould or core base is opened for blowing the mixture into the box.

3,834,443

METHOD AND APPARATUS FOR MANUFACTURE OF TUBULAR BODIES BY ELECTROSLAG REMELTING

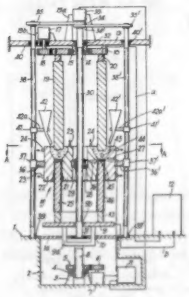
Akira Ujiie, Kobe, Japan, assignor to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 9, 1973, Ser. No. 322,229

Claims priority, application Japan, Feb. 4, 1972, 47-12244

Int. Cl. B22d *27/02*

U.S. Cl. 164—52 **8 Claims**



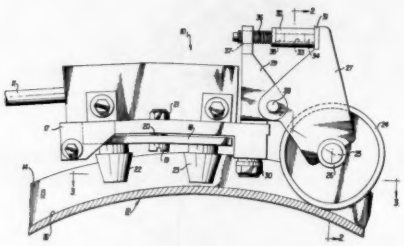
The disclosure provides an apparatus and a method for producing tubular bodies by an electroslag melting process. Metallic electrodes are suspended vertically with their lower ends projecting into a mould. The lower ends of the metallic electrodes are melted and form a pool of molten metal, from which the desired tubular body is formed. As the lower ends of the metallic electrodes are consumed the mould is raised so that contact is maintained between the lower ends of the metallic electrodes and the pool of molten metal.

3,834,444

METHOD AND APPARATUS FOR MAINTAINING A SMOOTH CASTING WHEEL USING A WHEEL SPREADER AND CRACK CLOSER

Milton E. Berry, Carrollton, Ga., assignor to Southwire Company, Carrollton, Ga.

Filed Dec. 23, 1971, Ser. No. 211,233
Int. Cl. B22d 11/06
U.S. Cl. 164—87 12 Claims



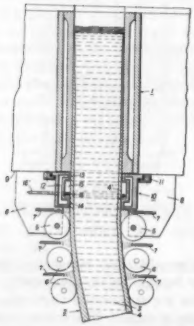
This disclosure relates to a combined wheel spreader and crack closer adapted to maintain the predetermined draft angle of the casting groove of an open casting wheel while simultaneously working the interior surface thereof to close cracks and smooth out flaws therein during a casting operation. The wheel spreader includes rollers adapted to bear in rolling contact against the interior side walls of the casting groove, and the crack closer includes a roller adapted to bear in rolling contact against the bottom surface of the casting groove.

3,834,445

CONTINUOUS CASTING MOLD HAVING A BREAKOUT SENSING AND CONTROL DEVICE

Heinz Raschke, Linz-Urfahr, Austria, assignor to Vereinigte Osterreichische Eisenund Stahlwerke, Linz, Austria

Filed Aug. 25, 1972, Ser. No. 283,849
Claims priority, application Austria, Sept. 20, 1971, 8129/71
Int. Cl. B22d 11/12
U.S. Cl. 164—150 10 Claims



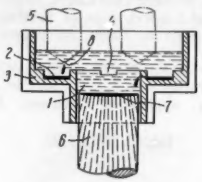
The invention relates to an apparatus to be used at a continuous casting plant for preventing the results of a break through of the solidifying bar. Such apparatus comprises a protective body which is resistant against liquid metal and immediately below the mould surrounds the bar shell over at least part of its circumference and is provided with a cavity open towards the bar shell for receiving liquid metal, and in said body a sensor connected with an alarm system for indicating a metal break through so that casting may be interrupted.

3,834,446

MOULD FOR ELECTROSLAG REMELTING OF METALS

Boris Izrailevich Medovar, bulvar Lesi Ukrainki, 2, k.v. 8; Vitaly Mikhailovich Bagla, ulitsa Semashko, 10, k.v. 24/3; Jury Vadimovich Latash, Vozduknoflotsky prospekt, 81, k.v. 14; July Georgievich Emelyanenko, ulitsa Jarvina, 5, k.v. 9; Boris Borisovich Fedorovsky, bulvar Lepse, 29, k.v. 64; Jury Fedorovich Alferov, ulitsa Borschagovskaya 143, k.v. I, and Evgeny Alexandrovich Abramovich, all of Kiev, U.S.S.R.

Continuation of Ser. No. 242,832, April 10, 1972, which is a continuation of Ser. No. 92,401, Nov. 24, 1970, both abandoned.
Filed June 8, 1973, Ser. No. 368,065
Int. Cl. B22d 27/02
U.S. Cl. 164—252 2 Claims



A mould for electroslag remelting of metals is disclosed, said mould comprising a space for forming an ingot, whose height is smaller than that of the ingot, and an intermediate tank filled up with molten metal and communicated with the space by ducts made in the flange of the mould, the outlets of the ducts being disposed as close as possible to the inner wall of the space to provide for a uniform delivery of the molten metal to the wall of the working space of the mould and, therefore, to make it possible to carry out the remelting process without using a deep metal bath with a flat bottom and to obtain ingots homogeneous in their structure and chemical composition. The mould can be used for producing ingots of a large cross section, for example, 800-3000 mm in diameter.

3,834,447

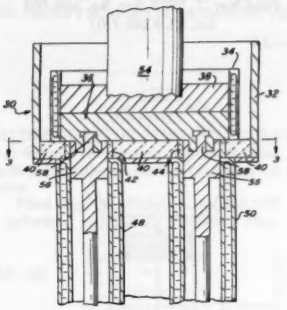
APPARATUS FOR CASTING A PLURALITY OF INGOTS IN A CONSUMABLE ELECTRODE FURNACE

John Luchok, Delran, and Patrick J. Wooding, Morrestown, both of N.J., assignors to Consarc Corporation, Rancocas, N.J.

Division of Ser. No. 177,939, Sept. 7, 1971, Pat. No. 3,782,445. This application May 9, 1973, Ser. No. 358,742
Int. Cl. B22d 11/10
U.S. Cl. 164—273 M 3 Claims

A method and apparatus for continuously casting one or more ingots by maintaining a pool of molten metal in a first ingot section that has a larger transverse cross sectional area than the transverse cross sectional area of the ingot mold or molds which are in open communication with said first ingot section by causing said molten metal to flow continuously from said pool into said ingot mold or molds while preventing

the molten metal in said pool from freezing at the interface of said first mold section and said mold or molds. A refractory



lining for said first mold section is used to prevent the molten metal from freezing.

3,834,448

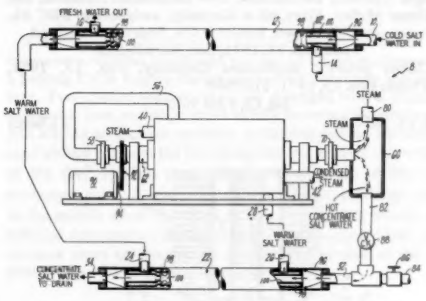
HEAT TRANSFER METHOD AND APPARATUS

Ralph D. Cooksley, 110 Ridgewood Rd., Waterford, Conn. 06385

Division of Ser. No. 813,570, April 4, 1969,. This application May 13, 1971, Ser. No. 142,893

Int. Cl. F28d 7/10

U.S. Cl. 165—1 **2 Claims**



Desalination apparatus for boiling salt water and condensing the resulting steam having a primary heat transfer unit with a twisted and spirally formed heat transfer tubular conduit for the salt water which is rotated within a steam chamber for heating the salt water while maintaining the salt water in the rotating tubular conduit substantially in its liquid state by the pressure increase resulting from its rotation. Steam emanating from the salt water heated by the primary heat transfer unit is conducted through a condenser having an elongated inner and outer coaxial twisted tubes and through which the inlet salt water is conducted, thereby preheating the cold water while condensing the steam. The hot salt water residue from the primary heat transfer unit is conducted through a secondary heat transfer unit (like the condenser in construction) for preheating the inlet salt water further before it is conducted to the primary heat transfer unit.

3,834,449

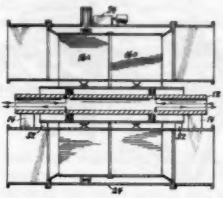
HORIZONTAL SUPPORT FOR ROTARY REGENERATIVE HEAT EXCHANGER

Harlan E. Finnemore, Wellsville, N.Y., assignor to The Air Preheater Company, Inc., Wellsville, N.Y.

Filed Apr. 5, 1972, Ser. No. 241,287

Int. Cl. F28d 19/00

U.S. Cl. 165—7 **5 Claims**



A rotor arrangement for a rotary regenerative heat exchanger that is adapted to rotate about a fixed horizontal shaft that extends axially through the rotor. The rotor is comprised of a plurality of independent sectorial segments, each of which is pivotally connected to a cylindrical sleeve which in turn concentrically surrounds the horizontal rotor shaft. Bearing means that support the sleeve for rotation about the horizontal shaft are located in the space between the rotor shaft and the concentric sleeve.

3,834,450

ROTARY REGENERATIVE HEAT EXCHANGER

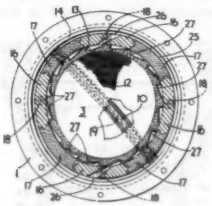
Robert Noel Penny, 12 Alderbrook Rd., Solihull, England

Filed Dec. 11, 1972, Ser. No. 313,881

Claims priority, application Great Britain, Dec. 18, 1971, 58898/71

Int. Cl. F28d 19/00

U.S. Cl. 165—8 **5 Claims**



A rotary regenerative heat exchanger in which a disc-like matrix is rotated by providing circumferentially-spaced impulse buckets around the outer periphery of the matrix into which a nozzle is arranged to discharge a jet of fluid.

3,834,451

AIR CONDITIONING SYSTEM WITH MULTIPLE FUNCTION HEAT EXCHANGER

Richard C. Kozinski, Warren, Mich., assignor to General Motors Corporation, Detroit, Mich.

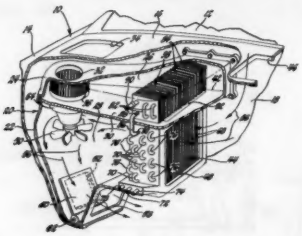
Filed Apr. 13, 1973, Ser. No. 350,918

Int. Cl. B60h 3/00

U.S. Cl. 165—23 **3 Claims**

An automobile heating and air conditioning system including a thin-walled casing whose interior is divided by a horizontal wall member into an upper and a lower compartment. An

evaporator is enclosed within the upper compartment and a combination condenser-engine coolant warmed heater is enclosed in the lower compartment. The lower compartment has one outlet to the passenger compartment of the automobile and another outlet to atmosphere. An air damper is pivotal between the two outlets to alternately block one or the other whenever the heating and air conditioning system is in a cooling or a heating mode of operation respectively. Air is passed through the evaporator and the condenser by blower means mounted on the divider wall. A recess in the divider wall beneath the evaporator collects water condensed on the evaporator and an opening through the wall member distributes the water onto the condenser to increase the effective cooling.



3,834,452

REMOVABLE HEAD PRESSURE VESSEL, ESPECIALLY FOR BOILING-WATER REACTORS

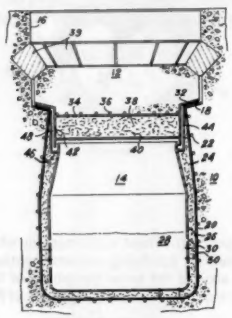
Didier Costes, Paris, France, assignor to Commissariat A L'Energie Atomique and Electricite De France (Service National), both of Paris, France

Filed Apr. 18, 1972, Ser. No. 245,239

Claims priority, application France, Apr. 21, 1971, 71.14145

Int. Cl. F24h *3/00*

U.S. Cl. 165—47 **9 Claims**



The pressure vessel comprises a main portion having a top opening, a lid for the tight closure of the opening which is provided with a seal forming a leak-tight joint with the main portion and which is provided at the bottom portion thereof with a heat-insulating plug extending below the level of the leak-tight joint between the lid and the main portion. The heat-insulating plug has a continuous downwardly projecting peripheral skirt and the main portion comprises a trough placed in such manner that the skirt extends therein when the lid is in position.

3,834,453

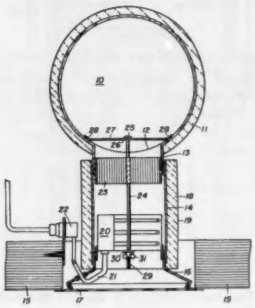
AIR CONDITIONING UNIT

Uno Waldemar Johansson, Kallered, Sweden, assignor to Tiem Incorporated AB, Stockholm, Sweden

Filed Nov. 7, 1972, Ser. No. 304,304

Int. Cl. F24h *3/02*

U.S. Cl. 165—54 **1 Claim**



An easily assembled air condition unit for attaching to an air distribution conduit comprising an air proof tubular member, a throttling member fitted into one end thereof, an air distributor member fitted at the other end, and a heater attached to the distributor member, the components being formed in such a manner that they are easily assembled and form a guide for fitting to a collar at the distribution conduit, a carrier extending therefrom passing through the unit and being provided with means for retaining the unit at the conduit.

3,834,454

COOLING ARRANGEMENT FOR THYRISTOR DISCS

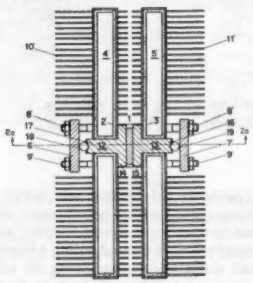
Gregor Gammel, Dossenheim; Uwe Heidtmann, Nusslock, and Elmar Muller, Alzey, all of Germany, assignors to BBC Aktiengesellschaft Brown, Boneri & Cie, Baden, Switzerland

Filed Feb. 11, 1972, Ser. No. 225,522

Claims priority, application Germany, Feb. 13, 1971, 2107008; Feb. 13, 1971, 2107009

Int. Cl. F28f *9/00*

U.S. Cl. 165—80 **2 Claims**



A cooling arrangement for dissipating the heat produced by a power thyristor disc includes a pair of metallic press blocks having a good heat conduction characteristic and which have their end faces clamped into pressure contact with opposite faces of the disc. Heat pipes filled with a vaporizable liquid are secured at the sides of the press blocks and these function to effect transfer of the heat from the blocks to the liquid causing it to vaporize and travel longitudinally in the direction away from the blocks. The heat in the vaporized liquid is removed

by condensation on the pipe wall and transferred to the surrounding atmosphere by cooling fins located on the outer wall surface of the pipes. The condensate is then returned to the heating zones at the ends of the pipes for recycling by means of a metallic capillary structure lining the inner wall surface of the pipes.

3,834,455

HEAT EXCHANGERS FOR STIRLING CYCLE ENGINES

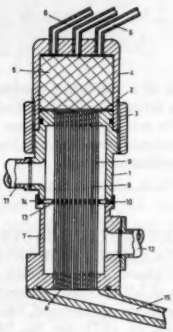
Sven Anders Samuel Hakansson, Malmo, Sweden, assignor to Kommanditbolaget United Stirling (Sweden) AB & Co., Malmo, Sweden

Filed May 15, 1973, Ser. No. 360,578

Claims priority, application Sweden, May 19, 1972, 23684/72

Int. Cl. F28f *7/00*

U.S. Cl. 165—81 **3 Claims**



A structural arrangement for a heat exchanger provides for movements without significant stresses of a heat exchanger in a Stirling Cycle Engine during changes of operating temperature. Two coaxial shell sections are arranged with a plurality of parallel heat exchange pipes axially mounted therebetween and affixed to the two sections. A flexible sealing element is sandwiched between the two shell sections to allow movement of the shell sections perpendicular to the axes of the heat exchange, pipes. A spacer separating the heat exchange pipes in the middle allow the pipes to bow as unit with evenly distributed deformation during temperature changes. Fluid conveyance pipes are connected to each shell section at the opposite ends of the heat exchange pipes.

3,834,456

AQUEOUS ORGANIC HEAT-SINK FLUIDS

Ewart C. Clarke, and David N. Glew, both of Sarnia, Ontario, Canada, assignors to The Dow Chemical Company, Midland, Mich.

Filed July 3, 1972, Ser. No. 268,465

Int. Cl. C09k *3/18;* **F28d** *13/00*

U.S. Cl. 165—104 **13 Claims**

This invention comprises aqueous organic hydrate compositions each of which melts at an invariant temperature and has a large latent heat of fusion associated with its liquid-solid phase change coupled with small volume changes. The compositions are, at normal temperatures, single phase, liquid, water-rich solutions containing at least one organic component. Such compositions are particularly suitable for use in thermal or heat-sink structures designed for environmental conditions experiencing large heat transfer fluxes.

3,834,457

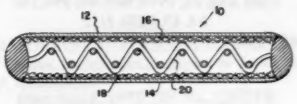
LAMINATED HEAT PIPE AND METHOD OF MANUFACTURE

Per Madsen, Detroit, Mich., assignor to The Bendix Corporation, Teterboro, N.J.

Continuation of Ser. No. 107,464, Jan. 18, 1971, abandoned. This application Jan. 17, 1973, Ser. No. 324,463

Int. Cl. F28d *15/00*

U.S. Cl. 165—105 **1 Claim**



A laminated heat pipe comprised of outer layers defining therebetween a heat pipe chamber, porous wick layers bonded to the inner surfaces of the outer layers, and an inner porous plenum layer located between and bonded to the wick layers. The porous wick layers are configured so that capillary flow of a contained working fluid will occur in the conventional manner, while the porous plenum layer is configured so that capillarity attraction thereto of the working fluid is lower than its attraction to the wick layers. Hence, the liquid phase working fluid is present substantially entirely in the wick layers, and the plenum layer provides both for a vapor flow path and structural support of the outer layers. The method of manufacture includes the step of first forming a laminate comprised of outer solid sheets, a pair of wick layers and an innermost sandwiched plenum layer all bonded together. The desired heat pipe configuration is then cut from the laminate, with the cut edge then sealed about its periphery save for a small opening through which the working fluid is introduced and which is subsequently sealed.

3,834,458

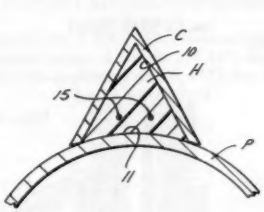
PIPE HEAT TRANSFER ASSEMBLY AND METHOD OF MAKING SAME

James E. Bilbro, and Ben C. Johnson, Jr., both of San Marcos, Tex., assignors to Thermon Manufacturing Company, San Marcos, Tex.

Filed June 15, 1973, Ser. No. 370,396

Int. Cl. B23p *15/26*

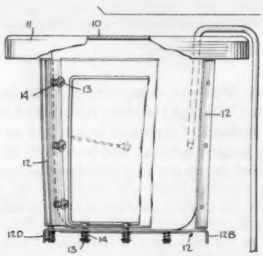
U.S. Cl. 165—164 **7 Claims**



Pipe heat transfer assembly and method of making same, wherein a strip of heat transfer material is pre-shaped to a solid flexible form for closely comforming with a heat transfer element for either heating or cooling and which is also pre-shaped to fit closely within an external channel member, whereby the entire assembly may be more easily and rapidly installed with unskilled labor in the field on a pipe to be heated or cooled, using retaining band means as the holding means for the assembly, with the assurance of complete coverage of the heat transfer element by said heat transfer material so as to eliminate air gaps. The heat transfer material may be pre-shaped by molding or extruding, with the heat transfer element embedded therein during such pre-shaping, or with a

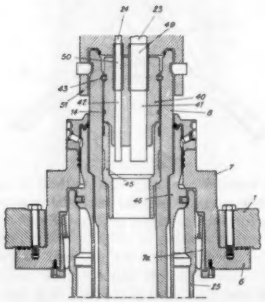
preformed space for the heat transfer element. The heat transfer material is solid, capable of retaining its shape, and remains flexible, after pre-shaping, within the normal temperature range to which the material is subjected, preferably within a range of from about 10°F. to about 120°F.

3,834,459
HEATED VESSEL FOR CORROSIVE FLUIDS
Howard M. Layton, Pound Ridge, N.Y., assignor to Interlab, Inc., Danbury, Conn.
Filed Aug. 22, 1973, Ser. No. 390,330
Int. Cl. F28b *3/12*
U.S. Cl. 165—169 **7 Claims**



An externally heated process vessel useable with corrosive fluids. The vessel is formed by a thin-walled container of a plastic material that is non-reactive with respect to the solution, and a jacket surrounding the container and in intimate contact therewith. The jacket is constituted by an assembly of metallic plate sections on whose outer walls are mounted heating elements. The joints of the section are joined to each other or to the plastic container by resilient means which render the jacket expansible to allow for differences in the thermal characteristics of the inner container and the outer jacket.

3,834,460
WELL-HEAD ASSEMBLY
Andre Brun, Paris, France; Albert Jaffe, and Philippe de Panafieu, both of London, England, assignors to Subsea Equipment Associates Limited (SEAL), Hamilton, Bermuda
Filed Dec. 27, 1972, Ser. No. 318,972
Claims priority, application France, Dec. 27, 1971, 71.46719
Int. Cl. E21b *33/035*
U.S. Cl. 166—.6 **11 Claims**

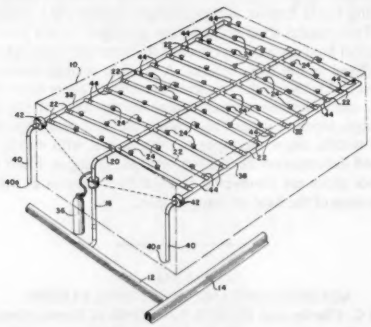


A two unit well head assembly for submarine oil well completions which includes suspension means for production pipes, connection means for electric lines and hydraulic control lines, valves for controlling flow through passageways in the well head and guide means to ensure correct alignment of the assembly.

3,834,461
TERTIARY RECOVERY OPERATION
Joseph T. Carlin, Houston, and Joseph C. Allen, Bellaire, both of Tex., assignors to Texaco Inc., New York, N.Y.
Filed Dec. 22, 1972, Ser. No. 317,581
Int. Cl. E21b *43/00*
U.S. Cl. 166—245 **8 Claims**

At the conclusion of a secondary recovery operation after breakthrough of the driving fluid at the production wells, additional injection wells are located between the original injection well and the production well(s), this region usually having a high oil saturation after the drive.

3,834,462
AUTOMATIC FIRE PROTECTION SYSTEM FOR LOW TEMPERATURE ENVIRONMENTS
Lawrence Orloff, Foxboro; John N. DeRis, Sharon, and John D. Coons, Norwood, all of Mass., assignors to Factory Mutual Research Corporation, Norwood, Mass.
Filed Feb. 28, 1973, Ser. No. 336,604
Int. Cl. A62c *35/00*
U.S. Cl. 169—17 **10 Claims**



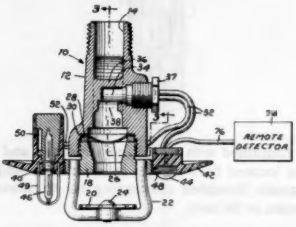
A fire extinguishing system for low temperature environments in which a network of pipes are supported in an elevated position in the space to be protected and are connected to a source of extinguishant. A plurality of thermally operable extinguishant discharge heads are connected to the network of pipes and are adapted to open in response to a predetermined fire condition in the space. A control valve normally prevents the flow of extinguishant to the network of pipes, and is responsive to the opening of one or more of the heads for permitting the flow of extinguishant to the network of pipes. One or more common drain lines are connected to

the pipes in the network for permitting the flow of extinguishant through all of the pipes upon the opening of one or more of the heads.

3,834,463
SENSITIVE SPRINKLER

Roger L. Allard, North Smithfield; William J. Malinowski, and Rudolph W. Kalns, both of Pembroke, all of R.I., assignors to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Feb. 28, 1973, Ser. No. 336,849
Int. Cl. A62c *35/08*
U.S. Cl. 169—28 **17 Claims**

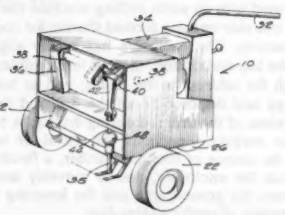


A sensitive sprinkler includes a body having an inlet port coupled to a fluid supply line and an outlet orifice having a deflector mounted adjacent thereto to deflect fluid flowing through said sprinkler. A rupture disc valve is positioned in the fluid flow path between the inlet port and outlet orifice to block fluid flow through the flow path. An explosive squib is mounted in the fluid flow path upstream of the rupture disc so that when exploded an expansive gas directs a pressure through said fluid to rupture the disc. A fire detector assembly electrically activates the squib substantially immediately upon detection of a fire.

3,834,464
AERATING MACHINE

Carl H. Carlson, St. Paul, and Frank A. Slaker, New Brighton, both of Minn., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Feb. 27, 1973, Ser. No. 336,381
Int. Cl. A01b *45/02*
U.S. Cl. 172—22 **11 Claims**

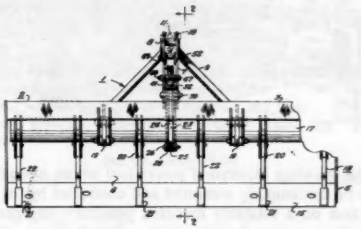


Disclosed herein is an aerating machine including a frame supported on a pair of ground-engaging wheels, a drive shaft which is selectively and rotatably driven by an engine, a crankshaft which is operably connected to and vertically reciprocates a plurality of turf-perforating tines, and a camshaft which is operably connected to the tines to provide synchronized movement thereto so that the tines are maintained in stationary horizontal position relative to the ground during aeration. The wheels, the crankshaft, and the camshaft are selectively driven by the drive shaft through chain and sprocket drives which are actuated by clutches located on the drive shaft and the camshaft. The operation of the clutches is controlled by a single control lever which pivotally mounted on the frame for movement between spaced positions corresponding to different modes of machine operation and which is operably connected to the clutches by a linkage which is arranged to coordinate the engagement and disengagement of the clutches in response to pivotal movement of the single control lever between the various operating mode operations.

3,834,465
EARTH WORKING IMPLEMENT LIFT ASSEMBLY

Johnnie C. Collins, Dallas, Tex., assignor to Servis Equipment Company, Dallas, Tex.

Filed Feb. 5, 1973, Ser. No. 329,757
Int. Cl. A01b *49/02*, *59/043*
U.S. Cl. 172—197 **4 Claims**

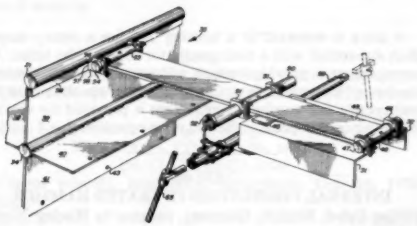


A lift assembly for an earth working implement adapted to be attached to a tractor rear lift mechanism and having a scraper blade and scarifier means movable between extended earth engaging and retracted inoperative positions, the assembly including extensible hydraulic means and crank means pivotally connecting the scarifier means to the hydraulic means for raising and lowering said scarifier means as well as latch means for maintaining the latter in extended position, said hydraulic means being pivotally mounted to permit its limited movement and prevent damaging thereof when extended upon accidental disengagement of the latch means and upward retraction of said scarifier means.

3,834,466
AGRICULTURAL APPARATUS FOR IRRIGATION PURPOSES

Earl E. Chandler, Rt. 1, Box 29AB, Florence, Ariz. 85232

Continuation-in-part of Ser. No. 251,147, May 8, 1972, abandoned. This application Aug. 6, 1973, Ser. No. 385,997
Int. Cl. A01b *13/16*
U.S. Cl. 172—235 **9 Claims**



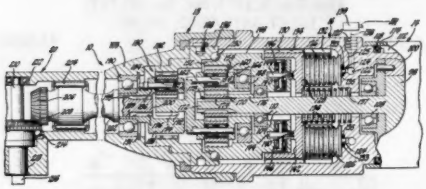
Apparatus intended for use in working the land immediately adjacent to an irrigation ditch to provide flow channels from the ditch to a plot of furrowed land spaced from the ditch or a plot of unfurrowed land such as used in growing hay or similar

crops. The apparatus comprises a frame that is drawn by a tractor and in which is rotatably mounted an assembly of four angularly spaced blades. Mechanism is provided to cause the blade assembly to rotate with an intermittent motion. The blade assembly is adjustable to adapt it to either of the two types of work above described.

3,834,467
POWER TOOL WITH TORQUE CONTROL

John R. Fuchs, Leawood, Kans., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 6, 1972, Ser. No. 304,149
Int. Cl. B25b *23/14*
U.S. Cl. 173—12 **11 Claims**

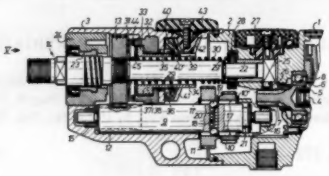


The drawings illustrate a power tool whose torque output may be continuously measured and controlled by the torque reaction on a rotatably mounted planetary ring gear, with transducer means associated therewith for converting the torque reaction to a fluid pressure signal to cut off the fluid flow to the motor rotor at a predetermined torque.

3,834,468
HAMMER-DRILL

Alfred Hettich, Echterdingen, and Reinhold Stroezel, Leinfelden, both of Germany, assignors to Robert Bosch G.m.b.H., Stuttgart, Germany

Filed Apr. 14, 1972, Ser. No. 243,939
Claims priority, application Germany, May 7, 1971, 2122582
Int. Cl. B25d *11/00*
U.S. Cl. 173—48 **9 Claims**



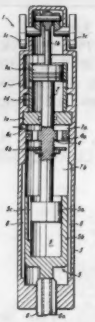
A drive is mounted in a housing and has a rotary output shaft connected with a tool spindle for rotating the latter. An arrangement is provided which will impart a predetermined number of longitudinally acting impacts per revolution on the tool spindle and another arrangement is provided for varying this number of impacts at the will of an operator.

3,834,469
INTERNAL COMBUSTION OPERATED HAMMER

Philipp Uebel, Munich, Germany, assignor to Wacker Werke KG., Munchen, Germany

Filed Nov. 14, 1972, Ser. No. 306,311
Int. Cl. B25d *9/00*
U.S. Cl. 173—75 **8 Claims**

An internal combustion operated hammer operated by a one-cylinder lifting motor, in which a driving rod directly drivingly connected to the motor piston and extending through the cylinder head of the motor linearly reciprocates in striking direction a striking mechanism which comprises parts

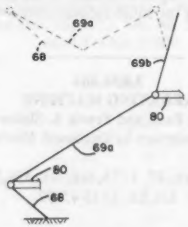


resiliently cushioned with regard to each other, and in which a compressor located between the cylinder head and the striking mechanism furnishes scavenging air to scavenging air passage means in the tool.

3,834,470
FLEXIBLE HOOD MEANS

Laszlo Gyongyosi, Clarksburg, and David A. Gregory, Lost Creek, both of Va., assignors to Ingersall-Rand Company, Woodcliff Lake, N.J.

Division of Ser. No. 332,686, Feb. 15, 1973, Pat. No. 3,800,890. This application Nov. 5, 1973, Ser. No. 412,740
Int. Cl. E21c *7/02*
U.S. Cl. 175—211 **5 Claims**



The system comprises an enclosure for enveloping a portion of drill rod used with an earth drilling machine the enclosure having only one side opening formed therein for coupling to a source of suction. The enclosure has axially aligned holes formed in the top and bottom thereof for admitting drill rod therethrough for address to the earth; and at least one "-floating" type seal disposed about the drill rod for tracking radial excursions of the drill rod during drilling. A baffle plate fixed to the enclosure prevents the travel of large earth cuttings to the source of suction. Further, a flexible hood is carried about the enclosure, and is movably mounted for elevation from the ground area and for lowering thereto to prevent an escape of earth cuttings dust.

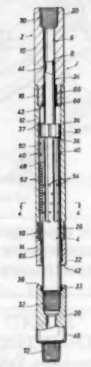
3,834,471
JARRING TOOL

Clifford C. Bottoms, San Fernando, Calif., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Mar. 12, 1973, Ser. No. 340,349
Int. Cl. E21b *1/10*
U.S. Cl. 175—304 **15 Claims**

A jarring tool in accordance with this invention may jar in either upward or downward direction and operates in either

direction without rotation or the like. A jarring tool of the present invention comprises an elongated outer member with an elongated inner member telescopically mounted therein. Each of the members has a pair of axially directed striking surfaces facing in opposite directions, and each such surface of one member is opposite to and engageable with one of the striking surfaces of the other member. The distance between the striking surfaces on one of the members is greater than the distance between the striking surfaces on the other member, so as to allow telescopic movement between the two members limited in either direction by engagement of two of the opposed striking surfaces. Spline means cooperative between the two members prevent rotation but allow relative axial movement. Latching means hold the two members in neutral relative positions. The latching means is releasable under axial forces of sufficient magnitude imposed on the members in one direction to allow telescopic contraction of the members and striking of one set of opposed striking surfaces, and releasable under axial forces of sufficient magnitude imposed on the members in the other direction to allow telescopic extension of the members and striking of the other set of striking surfaces.



3,834,472
JARRING ACCELERATOR

Lee E. Perkins, P.O. Box 1430, 127 Malibou Blvd., Houma, La. 70360

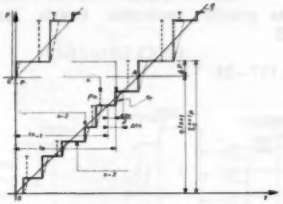
Filed Mar. 16, 1973, Ser. No. 341,964
Int. Cl. E21b *17/00*
U.S. Cl. 175—321 **18 Claims**

Accelerator apparatus for use with a jar in a drill string comprising: a cylindrical housing; a tubular mandrel disposed within the housing for axial movement between a fully retracted position and a fully extended position relative thereto; connection threads on the housing and mandrel for connecting the apparatus in a drill string above a jar; at least one annular chamber formed between the housing and mandrel; ports providing fluid communication between the chamber and a substantially constant pressure fluid source, and an annular surface carried on the mandrel within the annular chamber for transmitting forces from fluid within the chamber to the mandrel, tending to force the mandrel toward its retracted position. At least one other annular surface may be carried on a sleeve member mounted in the chamber independently of the mandrel but engagable by a portion of the mandrel on a predetermined amount of movement from its fully retracted position toward the fully extending position to cumulatively assist the first annular surface in transmitting forces from the fluid to the mandrel.

3,834,473
METHOD TO REGULATE FEEDING OF BULK MATERIAL

Marc M. Girard, Ugine, and Daniel M. Martin, Metz, both of France, assignors to Institut de Recherches de la Siderurgie Francaise, Saint-Germain-en-Laye, France

Filed May 21, 1973, Ser. No. 362,184
Claims priority, application France, May 25, 1972, 72.18591
Int. Cl. G01g *19/00*
U.S. Cl. 177—1 **4 Claims**



A method intermittently supplying bulk material, especially scrap iron, to a point of use so as to supply thereto a charge equal to a predetermined mean constant rate of supply per unit of time of such material, in which successive discrete quantities of such material are withdrawn, for instance by being elevated by an electromagnet, from a storage area, in which the weight of each withdrawn quantity or partial charge is measured, and in which the time of departure of each charge toward the point of use is calculated as a function of the sum of weights of preceding quantities released, the weight of the elevated quantity and the desired charge, and an apparatus for carrying out the aforementioned steps and to calculate the time periods of releasing successively raised quantities of material.

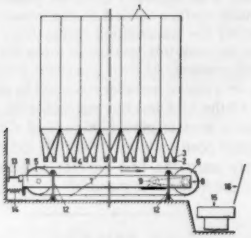
3,834,474
METHOD AND APPARATUS FOR DETERMINING THE QUANTITY OF A BULK MATERIAL DEPOSITED ON A CONVEYOR

Willem Knol, Oude Grensweg, 96 Hengelo (O.), Netherlands

Filed Oct. 15, 1971, Ser. No. 189,520
Int. Cl. G01g *3/00, 9/00*
Claims priority, application Netherlands, Oct. 16, 1970, 7015227
U.S. Cl. 177—1 **19 Claims**

The weight of bulk material deposited on a conveyor is measured with reference to the force exerted by the conveyor on the material to accelerate it in the direction of transport. When the dispensed material contacts the conveyor belt, the belt applies a force to the material in the conveying direction to accelerate the material from its initial velocity to the

velocity of the conveyor belt. An equal and opposite reaction force is inherently applied to the conveyor by the material as the material is deposited onto the conveyor. The reaction force is directly related to the quantity of material dispensed

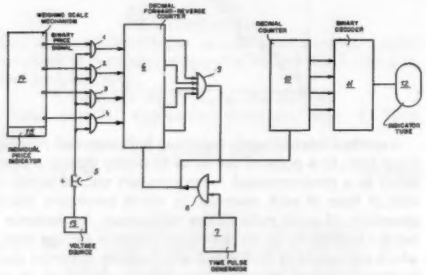


onto the conveyor belt since force F, acceleration a and mass m (a quantity measurement) are related by the basic equation $F = ma$. A suitable force measuring apparatus may be applied to detect the force or quantity measurement.

3,834,475
WEIGHING SYSTEM

Fritz Kuchler, Klagenfurt, Austria, assignor to Brain Dust Patents Establishment, Vaduz, Liechtenstein

Filed Mar. 26, 1973, Ser. No. 345,075
Claims priority, application Austria, Mar. 24, 1972, 2575/72
Int. Cl. G01g *23/22*
U.S. Cl. 177—25 **6 Claims**



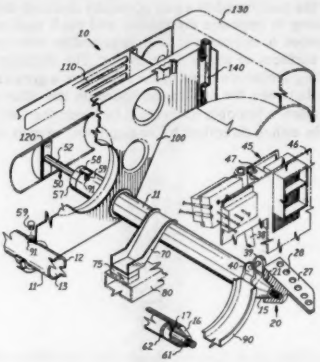
An input couples a weighing scale having an individual price indicator and producing a binary signal corresponding to the price of a transaction to inputs of a first counter for selectively supplying signals corresponding to the price of a transaction from the weighing scale to the first counter. The first counter thus provides a count corresponding to the price of each weighing transaction An output couples the outputs of the first counter to the input of a second counter and simultaneously erases the count of the first counter. The second counter thus provides a count corresponding to the total price of a plurality of weighing transactions.

3,834,476
IMPACT ATTENUATING, REPLACEABLE POWERPLANT SUPPORT

George Alan Donaldson, 237 E. Dunton Ave., Orange, Calif. 92665

Filed Nov. 6, 1972, Ser. No. 304,223
Int. Cl. B60r *21/00*
U.S. Cl. 180—64 L **4 Claims**

An easily replaceable powerplant support is disclosed for use on motor vehicles, of either rigid frame or unit body construction. The two main intercostal members are adaptable to engage impact attenuating devices while the vehicle is in use;

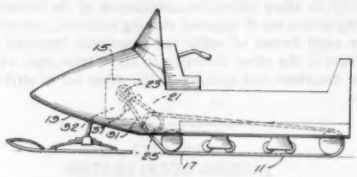


as well as being adaptable to engage a powerplant removal fixture during removal or replacement of the powerplant and its support for maintenance and inspection or substitution.

3,834,477
SNOWMOBILE CHAIN TENSIONING DEVICE

Louis W. Sandow, Menomonee Falls, Wis., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed May 4, 1973, Ser. No. 357,392
Int. Cl. B62d *55/12*; **F16h** *7/08*
U.S. Cl. 180—9.64 **1 Claim**



Disclosed herein is a snowmobile including first and second idler members respectively located exteriorly of the opposite runs of a flexible endless member trained about driving and driven members supported by a chassis at a fixed distance from each other, means co-axially mounting the idler members for pivotal movement into engagement with the outer surface of the flexible endless member, and a unitary helical spring biasing the idler members in opposite rotative directions toward each other so as to engage the idler members with the outer surface of the flexible endless member and thereby to tension the flexible endless member.

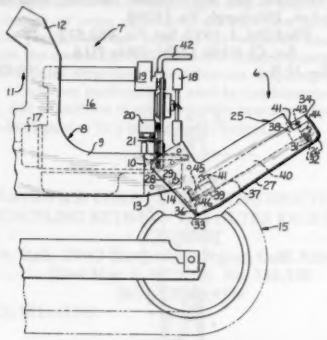
3,834,478
PIVOTAL GUARD FOR A VEHICLE

George F. Alexander; Frank J. Helmig, both of Pekin; Eldon D. Oestmann, Washington, and Ellis A. Sitton, East Peoria, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Mar. 28, 1973, Ser. No. 345,568
Int. Cl. B60k *11/04*
U.S. Cl. 180—68 P **17 Claims**

A pivotal guard for a vehicle having a main frame with a heat generating power unit supported thereon and a heat exchanger operatively associated with the power unit including a generally upstanding frame disposed in spaced shielding relation to the power unit and being pivotally connected to the

vehicle main frame with the heat exchanger removably secured in the upstanding frame so that the guard and the heat



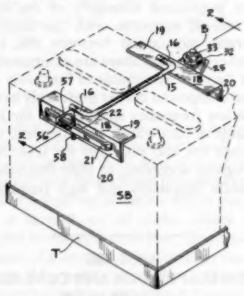
exchanger may be swung as a unit away from the power unit to provide service access thereto.

3,834,479

BATTERY HOLDDOWN

Bernard P. Bowers, Ontelaunee Township, Berks County, and Delight E. Breidegam, Jr., Kutztown, both of Pa., assignors to East Peru Manufacturing Company, Inc., Lyon Station, Pa.

Continuation-in-part of Ser. No. 330,516, Feb. 8, 1973.
Filed May 29, 1973, Ser. No. 364,624
Int. Cl. B60r *18/02*
U.S. Cl. 180—68.5 **4 Claims**



A storage battery holddown is disclosed having a transverse bar with end holder brackets secured at each end, the end brackets having horizontal flanges for engagement with the battery case and vertical flanges extending downwardly along and close to opposite sides of the battery case. The vertical flanges have struck-out strips extending substantially their length for engagement by attaching or clamping devices. At one side of the battery the clamping device includes a clip for engagement with a vertical threaded bolt and at the other side a retaining bracket rod engaging in an opening in an interior wall portion of the vehicle and with a vertical flange and associated struck-out strip.

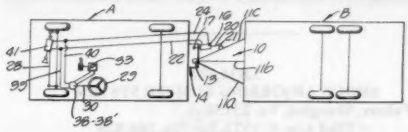
3,834,480

HYDRAULIC TRAILER STEERING AND SWAY CONTROL MECHANISM

Leland T. McGee, Rt. No. 1, Box 69E, Fort Jones, Calif. 96032

Filed Dec. 8, 1972, Ser. No. 313,503
Int. Cl. B60d *3/00;* **B62d** *5/06*
U.S. Cl. 180—79.2 B **5 Claims**

Automatic trailer steering and sway control mechanism in which the wheel guiding means of the tow vehicle operates through a hydraulic steering cylinder having coupled relation with a hydraulic steering cylinder on the pulling tongue of the trailer such that the tow vehicle and trailer vehicle become a



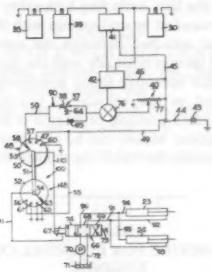
coordinated and synchronized unit in which the trailer is stabilized by being steered, rather than dragged, in the proper and more efficiently desired direction in response to guiding changes in the direction of travel of the tow vehicle.

3,834,481

WHEEL SLIPPAGE SENSING CONTROL FOR A VEHICLE

Richard G. Carlson, Greendale, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Oct. 25, 1972, Ser. No. 300,715
Int. Cl. B60l *3/10*
U.S. Cl. 180—82 R **11 Claims**



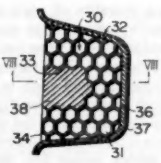
A drive wheel slippage sensor and control for operating in conjunction with the weight distribution system on a draft vehicle.

3,834,482

OCCUPANT PROTECTION DEVICE FOR MOTOR VEHICLES AND THE LIKE

Akihiro Wada, Chiryu, and Shingto Ito, Toyota, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichiken, Japan

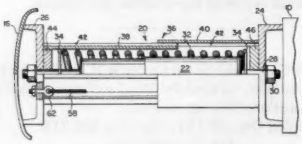
Filed June 15, 1972, Ser. No. 263,242
Claims priority, application Japan, Oct. 20, 1971, 46-83118
Int. Cl. B60k *37/00;* **B60r** *21/02*
U.S. Cl. 180—90 **2 Claims**



An occupant protection device for automotive vehicles including a honeycomb shaped structural member attached to the base of an instrument panel, a pad layer and a fancy covering. The honeycomb shaped structural member has a plurality

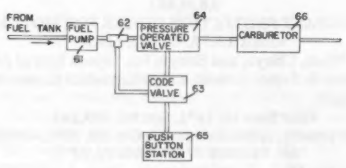
of hollow cells surrounded by side walls having openings in the direction perpendicular to that of the action of impact force and protects the occupant by permitting the deformation of the member to absorb shock which may be caused by a secondary collision of the occupant with the instrument panel.

3,834,483
SHOCK ABSORBING BUMPER SYSTEM
J. F. Palmer, Shanghai, Va. 23158
Filed Aug. 9, 1973, Ser. No. 386,926
Int. Cl. B60k *33/00;* **B60r** *19/06*
U.S. Cl. 180—91 **4 Claims**



A compound shock absorbing bumper system for automotive vehicles and the like, including a plurality of fluid operating cylinders surrounded by coil springs with the combination being housed and attached between the vehicle frame and bumper. The coil springs normally urge the bumper and cylinders to an extended operative shock absorbing position. Controls are provided in the vehicle to selectively move the bumper to a retracted position or release it for movement to the extended position. Means can be combined with the controls to simultaneously downshift the vehicle drive system.

3,834,484
ANTI-THEFT DEVICE FOR INTERNAL COMBUSTION ENGINES
Arlon G. Sangster, Sterling, Mass. 01564
Filed Apr. 5, 1972, Ser. No. 241,354
Int. Cl. B60r *25/04*
U.S. Cl. 180—114 **7 Claims**

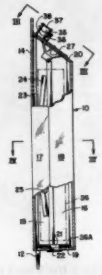


A keyboard with a plurality of push buttons thereon is mounted in the driver's compartment and is connected by push rods to a new and improved valve mechanism in the fuel line adjacent the carburetor. The valves are arranged to operate only in a predetermined code to allow gas to flow when the ignition switch is turned to "on" position.

A solenoid is de-energized to move the valves canceling the code when the ignition is turned off, and even though this sole electric part of the device should fail, the operation of the vehicle would be the same as though the theft-proof device were not present.

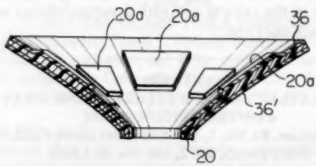
Means is also operable to prevent the cancellation of the code at the operator's will, so that the vehicle can be operated as normal.

3,834,485
ACOUSTIC SPEAKER SYSTEM
Antony Z. Doschek, and Mary Louise Doschek, both of 84B Kingston Ave., Pittsburgh, Pa. 15205
Filed Oct. 1, 1973, Ser. No. 402,572
Int. Cl. G10k *13/00;* **H04r** *7/18*
U.S. Cl. 181—31 B **10 Claims**



An acoustic speaker system is provided having a substantially air-tight speaker enclosure without uninterrupted parallel interior surfaces, said enclosure having a length to width ratio greater than 3 and preferably between 4 and 5. Dampening means are provided to reduce and disperse resonant vibrations of the enclosure. Low frequency, middle frequency and high frequency loudspeakers are rigidly and angularly mounted on an end portion of the enclosure in substantially parallel relation, preferably at an angle between 35° and 55° to an associated compound corner of a listening room. The middle and high frequency speakers are both preferably back enclosed and are positioned exteriorly of the low frequency speaker on stand-off supports, with the middle frequency speaker preferably positioned between the low and high frequency speakers. The speakers are positioned with the enclosure so that they are all capable of forwardly radiating into a closely spaced compound corner preferably between 1½ and 5 feet from the low frequency speaker and the low frequency speaker is capable of backwardly radiating into the enclosure. Cross-over means are also provided for selectively directing the electrical signals according to their frequency to the low frequency, middle frequency and high frequency speakers, respectively.

3,834,486
VIBRATION DIAPHRAGM AND CONE EDGE OF A LOUDSPEAKER
Yasuhiko Tsuge, and Noboru Koizumi, both of Osaka, Japan, assignors to Matsushita Electric Industrial Company, Limited and Sekisui Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan
Filed May 30, 1972, Ser. No. 257,527
Claims priority, application Japan, May 28, 1971, 46-44319; July 5, 1971, 46-49725; July 12, 1971, 46-61451
Int. Cl. G10k *13/00;* **H04r** *7/00*
U.S. Cl. 181—32 R **7 Claims**



Herein disclosed are an improved vibration diaphragm and an improved cone edge of a loudspeaker, wherein the vibra-

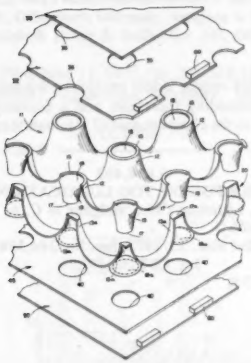
tion diaphragm is formed of a foamed plastics which is formed with portions having a density or densities lower than the remaining portion of the diaphragm and/or which has at least one coating of resin applied to at least one surface of the foamed plastics in the form of an aqueous emulsion and wherein the cone edge is formed of a foamed plastics having a closed-cellular structure. The vibration diaphragm and cone edge, which may preferably be used in combination with each other, will contribute to improving the acoustic characteristics of the loudspeaker to a considerable extent.

3,834,487

SANDWICH CORE PANEL WITH STRUCTURAL DECOUPLING BETWEEN THE OUTER FACE SHEETS THEREOF

Jesse R. Hale, 25913 Stanford St., Hemet, Calif. 92343

Filed Mar. 8, 1973, Ser. No. 339,339
Int. Cl. E04b *1/84*
U.S. Cl. 181—33 G **4 Claims**



A sandwich core panel is formed from an inner and an outer pair of face sheets which are spaced from each other and having core structures formed from first and second anticlastic membranes respectively sandwiched therebetween. The membranes each have a first set of nodes which project in a first direction and a second set of nodes which project in a direction opposite to the first direction. The nodes of the first set have end faces of a smaller diameter than the end portions of the second set. The end face portions of the second set of nodes of both membranes have apertures formed therein such that the end portions of the first sets of nodes of each of the membranes pass through the node end portions of the other membrane. The end face portions of the first set of nodes for each of the membranes is adhered to the inner surface of a respective one of the outer face sheets, while the end portions of the other set of nodes of each of the membranes is adhered to the inner surface of a respective one of the inner face sheets. This arrangement provides a structurally rigid unit having a high strength to weight ratio with decoupling between the face sheets such that the transfer of energy therebetween is attenuated.

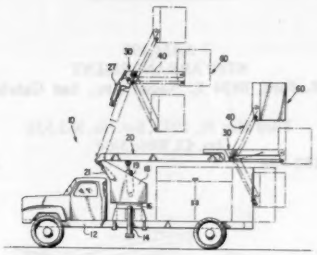
3,834,488

AERIAL PLATFORM WITH ARTICULATING JIB

John L. Grove, P.O. Box 695, McConnellsburg, Pa. 17233

Filed Nov. 6, 1972, Ser. No. 303,760
Int. Cl. B66f *11/04*
U.S. Cl. 182—2 **14 Claims**

An aerial platform is carried by an extensible boom which is mounted on a motor vehicle for swinging movement in horizontal and vertical planes: a connector is pivoted to the end of the boom, a jib is pivoted at one end to the connector for vertical swinging movement and the aerial platform is pivotally connected to the other end of the jib. The jib has upper and lower arms, which remain parallel. The platform is



a basket and the arms are connected to the lower portion of the basket. Power devices cause pivoting of the connector relative to the boom, and the boom relative to the vehicle, and comprise hydraulic cylinders connected in master-slave relationship.

3,834,489

FIRE ESCAPE DEVICE WITH BELT TIGHTENING SLIDE

Nicholas A. Rabelos, Daytona Beach, Fla., assignor to Rescue Industries, Inc., Datona Beach, Fla.

Filed May 1, 1973, Ser. No. 356,081
Int. Cl. A62b *1/14*
U.S. Cl. 182—5 **7 Claims**

A fire escape in the form of an elongated flexible member anchored at the upper end thereof to a building structure or stationary device associated with the building structure with the flexible member being of sufficient length to reach to the ground or some other lower level by which a person may safely escape from a fire in the building. A slidable, manually actuated device is mounted on the flexible member for longitudinal sliding movement in relation thereto with the rate of movement or descent being manually controlled by a person supported therefrom by a belt type sling. The sling includes a flexible member such as a rope having its ends connected to the ends of a belt and a central portion extending through the slidable device with a slide receiving both portions of the rope for movement toward and away from the person whose torso

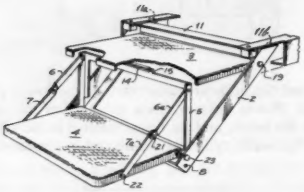
is encircled by the sling thereby enabling the sling to be snugly engaged with the torso of the person using the device thereby preventing the person from sliding downwardly through the sling thereby providing a fire escape device which is easy to use but yet will effectively retain the user in the belt type sling.

3,834,490

STEP ARRANGEMENT

Robert B. Ford, 8834 E. Naomi Ave., San Gabriel, Calif. 91775

Filed May 31, 1973, Ser. No. 365,536
Int. Cl. E06c *5/04*
U.S. Cl. 182—88 **4 Claims**



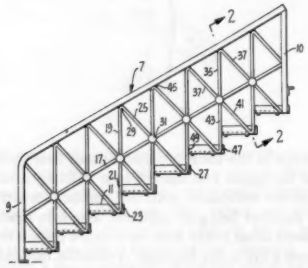
A foldable and retractable heavy duty set of steps is described wherein sheer loading on pivot points is relieved to provide special structural strength for unusual loading conditions.

3,834,491

RAIL OR TRUSS STAIRWAY

Clarence H. Pelto, 80 Duboce Ave., San Francisco, Calif. 94103

Filed July 11, 1973, Ser. No. 378,157
Int. Cl. E04f *11/12*
U.S. Cl. 182—106 **5 Claims**



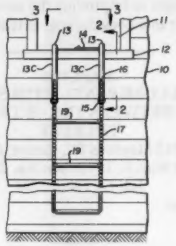
A truss or rail stairway is provided wherein the handrails support the weight of the stairway treads. The supports for the treads are in the form of triangular members so that a very rigid structure is provided, yet one which is light in weight.

3,834,492

PORTABLE FIRE ESCAPE LADDER

Hugo V. Ronk, Martinsburgh, W. Va., assignor to American La France Inc., Willoughby, Ohio

Filed Aug. 27, 1973, Ser. No. 392,125
Int. Cl. E06c *1/56*
U.S. Cl. 182—196 **5 Claims**



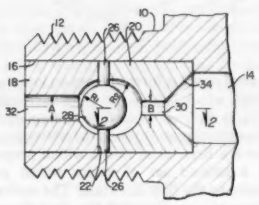
A portable fire escape ladder provides a window sill bracket with chains depending therefrom and a plurality of tubular rungs secured to the chains at spaced intervals therealong.

3,834,493

RECLASSIFIER FOR OIL FOG LUBRICATION SYSTEMS

Alexis Hubert, Littleton, Colo., assignor to C. A. Norgen Co., Littleton, Colo.

Filed Mar. 23, 1973, Ser. No. 344,356
Int. Cl. F16n *39/00*
U.S. Cl. 184—7 R **10 Claims**



Reclassifier for oil fog lubrication systems for producing oil droplets of discrete size for lubricating machines or the like, characterized by a generally spherical chamber having a ball supported therein forming a surrounding passageway between a supply orifice and a diametrically disposed discharge orifice. A film of oil collects on the upstream face of the ball and flows around its surface to the downstream face where it is picked up by the air flow and is discharged in the form of droplets through the discharge orifice.

3,834,494

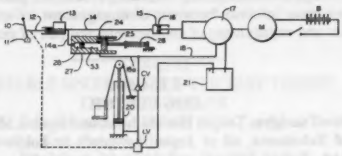
MANUALLY-CONTROLLED HYDRAULIC ACTUATOR SYSTEMS

Leo D. Bates, and Melvin R. Caldwell, both of Greene, N.Y., assignors to The Raymond Corporation, Greene, N.Y.

Filed Feb. 23, 1973, Ser. No. 335,030
Int. Cl. B66b *9/20*
U.S. Cl. 187—9 **15 Claims**

The power which a lift truck operator can demand by maximum deflection of a manual lifting control is made to vary automatically as a function of the load being lifted, thereby limiting power consumption to a safe amount but allowing small

loads to be lifted at high speeds. In a main embodiment hydraulic fluid is bled from a master-slave system which liks the operator control to a controllable hydraulic pump or motor, with the amount of fluid bled varying in accordance with the load. Means for providing various desired operating characteristics are illustrated.



3,834,495
PILE DELIVERY WITH SAFETY DEVICE

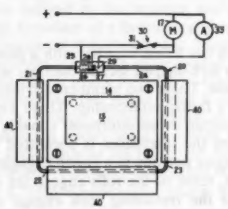
Claus Simeth, Offenbach, Germany, assignor to Roland Offsetmaschinenfabrik Faber & Schleicher AG, Offenbach/Main, Germany

Filed June 12, 1973, Ser. No. 369,155

Claims priority, application Germany, June 14, 1972, 2228839

Int. Cl. H02h 5/12

U.S. Cl. 187—29 R **1 Claim**



A delivery pipe installation for a sheet fed printing press or the like which includes a delivery platform of the floor-seating type with means for raising the platform and for lowering the platform to the floor as copies are deposited. Surrounding the platform location is an elastically deformable, fluid filled conduit, preferably in the form of a rubber hose, arranged at the floor in such a position that it will be stepped on by the operator in the event that he stands too close to the platform as it is being lowered to floor level. An electric switch responds to an increase in pressure within the hose, preferably for the purpose of disabling the motor which lowers the platform but alternatively to sound an audible or visible alarm to indicate to the operator that he is standing in a dangereous position.

3,834,496
VEHICLE SAFETY DEVICE

Takezo Takada, Hikone, Japan, assignor to Takata Kojyo Co. Ltc., Tokyo, Japan

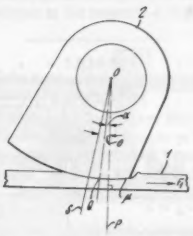
Filed Sept. 1, 1972, Ser. No. 285,718

Claims priority, application Japan, Sept. 18, 1971, 46-70327

Int. Cl. F16d 59/00

U.S. Cl. 188—136 **7 Claims**

A vehicle passenger restraining belt extends from a retraction reel and one or both opposite faces of the belt are frictionally engaged by respective brake members which are swingable about transverse axis. The brake member has a curved friction brake face spaced from its swing axis distances which increase in a direction opposite to the belt withdrawal direction. As a withdrawal force is applied to the belt its withdrawal is frictionally prevented by the brake member and with increased force the brake member is advanced to retract its point of engagement with the belt to increase the angle between a line extending perpendicularly to the belt from the brake member axis and a line between the axis and the point



of engagement until such angle exceeds a predetermined angle whose tangent equals the coefficient of friction between the brake and belt faces and the belt slips along the brake with the kinetic energy of the passenger being absorbed. The brake is normally disabled by a solenoid which is energized through a series of connected inertia switch, a manually actuated switch and a seat occupation actuated switch.

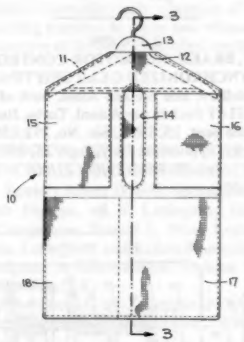
3,834,497
STORAGE BAG FOR CLOTHING ARTICLES OR THE LIKE

Beatrice M. Furst, 1723 Illingsworth Ave., Allentown, Pa. 19103

Filed Oct. 19, 1972, Ser. No. 299,172

Int. Cl. A45c 11/00

U.S. Cl. 190—43 **6 Claims**



A storage bag which can be used for camping or the like is substantially flat when not being used to accommodate articles so that it can be folded or rolled into a package of low bulk when stored. The bag is used in connection with a conventional clothes hanger and has an inner chamber for storing bulky items. Quick access to this chamber is provided by a slit or opening through a flat surface of the bag. Further, many additional articles may be stored in the bag by providing pockets on the front and rear surfaces thereof, which pockets are substantially flush with the flat bag when no articles are being stored therein.

3,834,498

VEHICLE BRAKING BY GEARING LOCK UP CLUTCHES

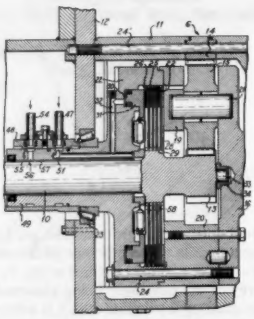
Herbert Edward Ashfield, Meltham, England, assignor to David Brown Tractors Limited, Huddersfield, England

Continuation-in-part of Ser. No. 117,553, Feb. 22, 1971, abandoned. This application Oct. 4, 1973, Ser. No. 407,893

Claims priority, application Great Britain, Feb. 28, 1970, 9788/70

Int. Cl. F16h *57/10*; B60k *29/02*

U.S. Cl. 192—4 A 10 Claims



A drive control system for a vehicle such as an agricultural tractor includes disc braking means for the vehicle's final drive transmission having co-axial input and output shafts drivably connected by epicyclic gearing including a non-rotatable reaction member in which two mutually engagable elements of the braking means are carried by respective members of the epicyclic gearing which are rotatable at different speeds. This enables the output member to be brought to rest without transmitting vibrations to the final drive casing due to neither of the mutually engagable elements of the braking means being connected to the casing. Associated with the braking means is an arrangement for lubricating the brake disc space during non-braking periods.

3,834,499

CLUTCH, BRAKE AND MOTOR CONTROLS FOR SYNCHRONIZED GEAR SHIFTING

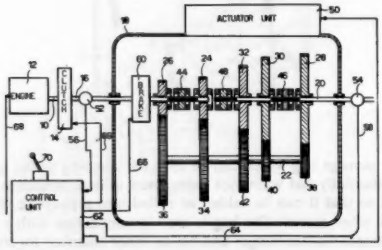
Giovanni Candellero, and Stefano Aimo, both of Turin, Italy, assignors to FIAT Societa per Azioni, Turin, Italy

Filed Sept. 25, 1972, Ser. No. 292,035

Claims priority, application Italy, Sept. 25, 1971, 70163/71

Int. Cl. B60k *29/00*, *21/00*

U.S. Cl. 192—.09 4 Claims



This invention provides an electronic gear synchronisation system for a motor vehicle gear box in which the input and output shaft speeds are recorded by respective transducers and the respective speed signals provided thereby are utilised in an electronic control unit to control the selective operation of accelerator means (e.g., the vehicle engine) and decelerator means (e.g., a shaft brake) acting on the gearbox input shaft so as to bring the ratio of the speeds of the input and output shafts into conformity with the preselected gear ratio, in a short time interval between disengagement of one pair of gears and engagement of another selected pair of gears.

3,834,500

DOG CLUTCH

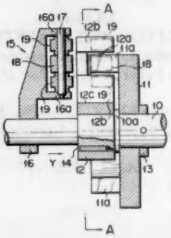
Teruo Tsuchiya, Tokyo; Hisashi Imai, and Ryohei Motegi, both of Yokohama, all of Japan, assignors to Tokyo Keiki Co., Ltd., Tokyo, Japan

Filed June 4, 1973, Ser. No. 366,852

Claims priority, application Japan, June 7, 1972, 47-56632

Int. Cl. F16d *11/04*, *27/10*

U.S. Cl. 192—67 R 4 Claims



A dog clutch has a first member with a plurality of dogs on one side and a fork-shaped second member with a plurality of dogs on one side. These two members are mounted on a common shaft in a facing relationship. Three engaging rolls are rotatably supported on an interposer capable of sliding along the axis. When the interposer is permitted to slide from a clutch disengaging position to a clutch engaging position by an electromagnet, some of the rolls engage the dogs of the first member while the remaining rolls engage the dogs of the second member, thereby effecting clutch engagement.

3,834,501

DUAL SPRING DEVICE FOR PREVENTING IMPROPER DISENGAGEMENT OF CLUTCH

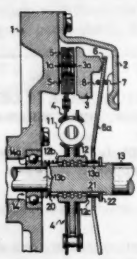
Kazuma Adachi, Yao, Japan, assignor to Kabushiki Kaisha Daikin Seisakusho Neyagawa, Osaka Pref., Japan

Filed Oct. 24, 1972, Ser. No. 300,366

Claims priority, application Japan, Jan. 12, 1972, 47-6478; Japan, Nov. 17, 1971, 46-107639

Int. Cl. F16d *13/50*, *13/22*

U.S. Cl. 192—70.28 1 Claim



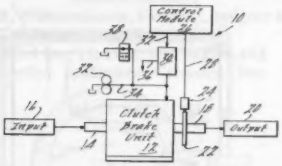
A device comprising a clutch disc having clutch facings between a flywheel and a pressure plate, a main drive shaft splined to a spline hub of the clutch disc for conjoint rotation

therewith, a pilot bearing for supporting an end of the main drive shaft rotatably on the flywheel, a spring member interposed between the splined hub and a portion of the pilot bearing to be rotated conjointly with the main drive shaft for moving the clutch disc to a neutral position upon disengagement of the clutch, and means for determining the neutral position.

3,834,502
VARIABLE SPEED DRIVE WITH ELECTRONIC CONTROL MEANS

Gordon M. Sommer, Grosse Pointe, Mich., assignor to G. M. Sommer Co., Inc., Detroit, Mich.

Filed Sept. 22, 1972, Ser. No. 291,216
Int. Cl. F16d *43/24*, *13/72*, *67/04*
U.S. Cl. 192—104 F **13 Claims**

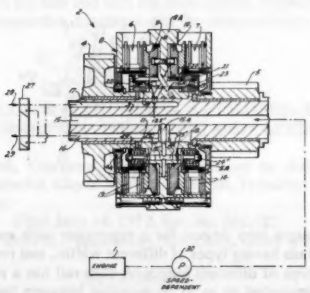


A variable speed drive comprising a clutch-brake unit having aligned input and output shafts rotatably supported in a housing and including clutch and brake disc stacks located in a liquid reservoir defined by the housing, and selectively engageable through actuation of a hydraulically operable piston. The loading pressure of the clutch disc stack is selectively modulated to provide a variable rotary speed to the output shaft by a control system which includes an electrically operable valve for controlling the piston, and a control module which provides a variable output signal to the valve in response to a selected rotary motion preset in the control module. In one application of the drive, the rotary motion of the output shaft is converted to bi-directional linear motion by the addition of a fixed displacement pump and a four-way valve.

3,834,503
DUAL HYDRAULIC COUPLING

Gerhard Maurer, and Fritz Geiger, both of Friedrichshafen, Germany, assignors to Zahnradfabrik Friedrichshafen Aktiengesellschaft, Friedrichshafen, Germany

Filed Apr. 2, 1973, Ser. No. 347,341
Claims priority, application Germany, Apr. 1, 1972, 2215922
Int. Cl. F16d *13/72*
U.S. Cl. 192—113 B **10 Claims**

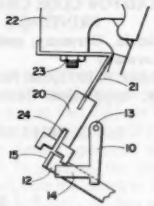


A dual hydraulic clutch, mounted on a shaft for operatively connecting same with either of two pinions seated thereon, has a central partition flanked by two axially movable pistons adapted to co-operate with respective sets of clutch plates. An axial displacement of either piston entrains two interconnected rings on opposite sides of the partition, each ring carrying a pair of spring-loaded plungers normally bearing on the partition for biasing both pistons into a retracted position. Upon the admission of pressure fluid to a piston for the engagement of its clutch plates, the corresponding plungers unblock a pair of normally blocked ports in the partition for the circulation of lubricant to the respective clutch assembly.

3,834,504
ANTI-FRAUD DEVICE FOR COIN OPERATED APPARATUS

Raymond Charles Hemming, and Harry Maria Coumans, both of London, Ontario, Canada, assignors to Northern Electric Company Limited, Montreal, Quebec, Canada

Filed Apr. 16, 1973, Ser. No. 351,467
Int. Cl. G07f *3/02*, *5/04*
U.S. Cl. 194—1 G **1 Claim**



An anti-fraud device for pay telephones and other coin operated devices in which a locking member which holds back a first inserted coin and is released by insertion of a second coin, is required to move past a stop which is flexibly mounted. In the event of attempted fraud by means of violently vibrating the apparatus —as by striking the coin release button vibration of the stop prevents movement of the locking member. Normally such vibration of the apparatus causes the locking member to move and release the first coin —causing actuation of the coin controlled mechanism.

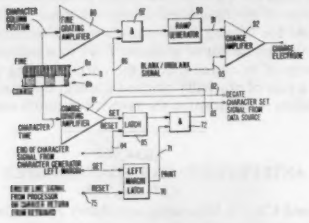
3,834,505
INK JET PRINTING APPARATUS WITH LINE SWEEP AND INCREMENTAL PRINTING FACILITIES

Raymond L. Fowler; James D. Hill; Richard W. McCornack; N. Kenneth Perkins, all of Lexington; Michael L. Sendelweck, Georgetown; Donald L. West, Lexington; Thomas H. Williams, Lexington, and Krikor Yosmali, Lexington, all of Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 11, 1972, Ser. No. 313,919
Int. Cl. G01d *15/18*
U.S. Cl. 197—1 R **10 Claims**

An ink jet printing apparatus is described having facilities for printing information in character locations, (boxes) each character location comprising a plurality of vertical columns of drop locations, and a number of characters comprising a line of information. Structures and circuits are included for insuring correct location of information within the character boxes and also providing for one mode in which characters are printed continuously line-by-line and another mode in which characters are printed incrementally character-by-character. During incremental printing, as well as the first character in a line or group of characters, provision is made for re-bounding the printhead back into the box of the character just printed, that is, prior to the next character box to be printed to insure

that when the printhead starts up again for the next character that all drop components for that character, including any



located in the immediate vicinity of the character boundary, are properly placed during printing.

3,834,506

RECORDER HEAD FOR CODE CHARACTERS IN LINE PRINTING

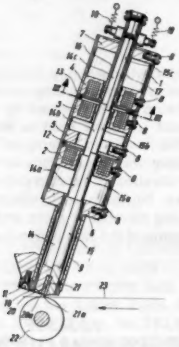
Horst Priebs, Bielefeld, Germany, assignor to Anker-Werke AG, Bielefeld, Germany

Filed Apr. 9, 1973, Ser. No. 349,624

Claims priority, application Germany, Apr. 8, 1972, 2216967

Int. Cl. B41j *3/50*

U.S. Cl. 197—1 R **4 Claims**



Recorder head for recording code characters by line printing includes a cylindrical housing having forward and rearward guide means, a pair of axially displaceable printing rods of substantially equal length disposed adjacent and parallel to one another and guidable by the forward and rearward guide means, means having a line type face located at the forward end of the printing rods, respectively, the line type of the printing rods having a printing width individually and in combination one with the other which embody respectively different line thicknesses for a parallel line code, electromagnet means comprising pot-shaped printing magnets disposed one behind the other and formed with respective core bores, armature plates located adjacent and coordinated with the printing magnets, respectively, the armature plates being also formed with respective bores, the pair of printing rods extending together through the core bores of the printing magnets and the bores of the armature plates, each of the printing rods having a stop operatively engageable by a respective armature plate in response to activation of the printing magnets for axially displacing the respective printing rod into a printing position, the printing rods respectively having a semicircular cross section and being formed with stepped longitudinally extending portions having respective end faces forming the stops for the armature plates of the respective printing magnets, the electromagnet means also including a potshaped restoring magnet having a bore through which the printing rods extend, and abutment means mounted on an end of the printing rods and drivingly engageable by a respective armature plate cooperating with the restoring magnet for displacing the printing rods to a non-printing position.

3,834,507

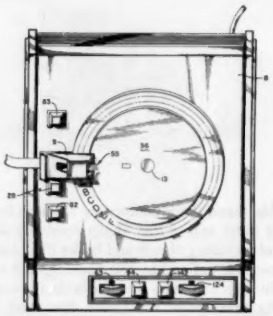
PRINTING APPARATUS

Franklin C. Bradshaw, St. Paul, Minn., assignor to Kroy Industries Inc., Stillwater, Minn.

Filed Jan. 30, 1973, Ser. No. 327,945

Int. Cl. B41j *1/30*

U.S. Cl. 197—6.7 **8 Claims**



A printing apparatus of the type having an image carrier, a color carrier, a font with a plurality of raised, selectively positionable characters, and a piston assembly whereby activation of the piston assembly causes an image to be transferred from the color carrier to the image carrier. The printing apparatus further includes backspace means for compensating for letter interlock.

3,834,508

MULTIPLE PITCH MARGIN STOP DEVICE

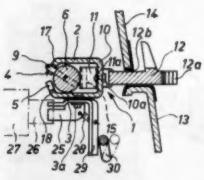
Gerhard Ruh, Wilhelmshaven, Germany, assignor to Olympia werke AG, Wilhemshaven, Germany

Filed Oct. 26, 1972, Ser. No. 300,991

Claims priority, application Germany, Nov. 16, 1971, 2156772

Int. Cl. B41j *21/02*

U.S. Cl. 197—63 **10 Claims**



A margin stop device for a typewriter with exchangeable type heads having types of different widths, and requiring carriage steps of different length. A stop rail has a row of stops and is mounted so as to be movable between two operative positions in which one stop engages one or the other of two rack portions of a margin stop on the stop rail. The rack portions have recesses of different pitches, corresponding to the

different carriage steps, and the rack portions are long enough to include pairs of first and second registering recesses. The length of the rack portions is at least equal to the distance between the stops on the stop bar so that at least one stop is located in the first or second recesses when the stop rail is in one of the operative positions. The stop rail with the margin stop in an operative position, is blocked against longitudinal movement for stopping the typewriter carriage in a position corresponding to the length of the carriage steps for that operative position. In each operative position, the respective rack portion can be manually operated to release the engaging stop so that the margin stop can be longitudinally adjusted and then again placed in the respective operative position.

3,834,509

FUNCTION CONTROLLING MARGIN STOP ARRANGEMENT

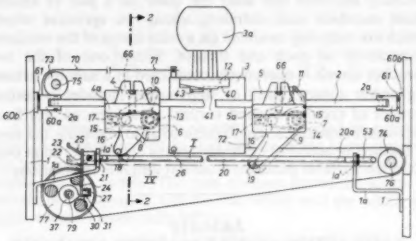
Gerhard Ruh, Wilhelmshaven, Germany, assignor to Olympia Werke AG, Wilhelmshaven, Germany

Filed Dec. 15, 1972, Ser. No. 315,662

Claims priority, application Germany, Dec. 16, 1971, 2162431

Int. Cl. B41j *21/02*

U.S. Cl. 197—63 **15 Claims**



The first and second margin stops of a typewriter carry first and second control levers operated by the typewriter carriage at the end and beginning of a typed line, respectively, and being located on opposite sides of a control bail which is turned by the operated first control lever to effect a first function required at the end of a typed line, for example, ringing a bell, and by the operated second control lever to effect a function required at the beginning of a typed line after a carriage return, for example, disengaging a drive clutch so that the carriage stops. Since the bail is parallel to the margin stop rail, the control levers can slide along the bail when the margin stops are adjusted. Lost motion connections are provided between an actuating lever secured to the control bail, and links connected with the bell and with the drive clutch, respectively, so that the respective functions can be independently carried out.

3,834,510

DEVICE FOR CONTROLLING A KEY-OPERABLE, POWER-DRIVEN LINE SPACING AND CARRIAGE RETURN

Josef Lendl, Ottensoos, Germany, assignor to Adlerwerke vorm Heinrich Kleyer Aktiengesellschaft, Frankfurt (Main), Germany

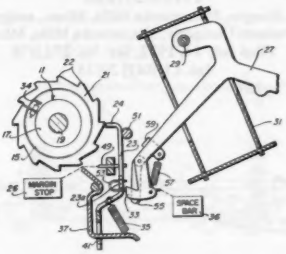
Filed June 14, 1972, Ser. No. 262,627

Claims priority, application Germany, June 16, 1971, 2129842

Int. Cl. B41j *19/90*

U.S. Cl. 197—120 **4 Claims**

The operation of a conventional power-driven typewriter mechanism for line indexing a paper platen and moving a carriage to a left margin position is controlled by a latching arrangement which is provided for engaging and effecting the operation of a clutch in the power drive to the mechanism. The latching arrangement is initially operated by depressing a carriage return key to a first position to initiate the operation of the clutch to cause line indexing and carriage movement to a left margin position, whereupon further depression of the carriage return key causes the latching arrangement to repeatedly engage and operate the clutch for effecting repeated line indexing. When the clutch is engaged and operated by the



latching arrangement to effect carriage movement, the latching arrangement is temporarily removed from the control of the carriage return key so that if power to the typewriter is interrupted the latching arrangement will be disengaged from the clutch to prevent further operation when power to the typewriter is restored. In addition, the latching arrangement may also be disengaged from the clutch to interrupt the movement of the carriage by actuating another suitable key, for example, the space bar.

3,834,511

RIBBON TRANSPORTING ARRANGEMENT

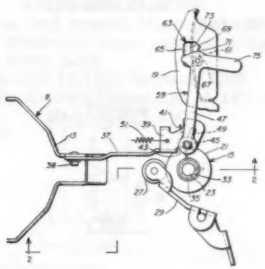
Hans-Georg Hengelhaupt, Nuernberg, Germany, assignor to Triumph Werke Nuernberg, AG, Nuernberg, Germany

Filed Apr. 12, 1973, Ser. No. 350,522

Claims priority, application Germany, Apr. 20, 1972, 2219312

Int. Cl. B41j *33/14*

U.S. Cl. 197—151 **3 Claims**



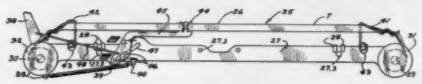
A typewriter ribbon is carried by a ribbon lifter and advanced therethrough in response to the movement of the ribbon lifter. The ribbon is frictionally engaged for advancement by a drive roller carrying a coiled clutch spring and rotational movement is imparted to the drive roller by an actuating linkage connected to the ribbon lifter and having a pair of spaced-apart abutments for engaging a free end of the clutch spring. Movement of the actuating linkage in one direction constricts the clutch spring and rotates the drive roller, while movement of the actuating linkage in a reverse direction enlarges the clutch spring to effect relative rotational movement with the

drive roller. The advancement of the ribbon in response to the movement of the ribbon lifter is selectively controlled by adjusting means for varying the distance between the pair of spaced-apart abutments of the actuating linkage.

3,834,512
CORRECTION TAPE ATTACHMENT FOR TYPEWRITERS

Dorothy E. Haugen, Minnetonka Mills, Minn., assignor to Efficiency Products Company, Minnetonka Mills, Minn.

Filed July 14, 1972, Ser. No. 272,078
Int. Cl. B41j 29/16
U.S. Cl. 197—181 **8 Claims**

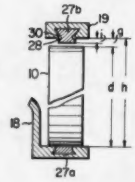


A typewriter attachment presenting correction tape in the strike area of the type and between the ink ribbon and the platen, the attachment having supply and take-up spools on the frame which is a thin strip of stiff sheet metal fitted onto a substantially flat paper guide; and also having an operating lever to alternately raise the correction tape into the strike area of the type and then return the tape below the strike area and simultaneously advance the tape to locate a fresh portion of the tape adjacent the strike area for subsequent use.

3,834,513
GUIDE RAIL MEANS

Masaki Miura, Katsuta; Ken Ichiryu, Mito, and Hayashi Nakazawa, Katsuta, all of Japan, assignors to Hitachi Ltd., Tokyo, Japan

Filed Dec. 13, 1972, Ser. No. 314,535
Claims priority, application Japan, Dec. 20, 1971, 46-102716; Mar. 8, 1972, 47-23182; Mar. 8, 1972, 47-2319
Int. Cl. B66b 9/12
U.S. Cl. 198—16 R **28 Claims**

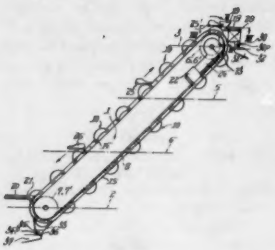


Guide rail means on which wheels travel, characterized by the provision of elastic members for absorbing impact forces occurring in contact engagement of said wheels with the cooperating guide rails, said elastic members being disposed along the respective surfaces of the guide rails as projecting slightly beyond said surfaces of the guide rails, so that only after the impact forces of the wheels having been absorbed by said elastic members, the wheels are adapted for direct contact engagement with the cooperating guide rails to finally be conducted substantially by the guide rails.

3,834,514
ESCALATOR

Moritomo Wakamatsu, Yokohama, Japan, assignor to Nihon Algonquin Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 2, 1973, Ser. No. 320,276
Int. Cl. B66b 9/12
U.S. Cl. 198—16 **1 Claim**

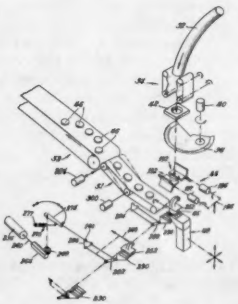


A portable escalator for use in a structure, such as a cargo hold of large ships, comprising a number of step means pivotally mounted one after the other on a pair of endless chain members each entrained about two sprocket wheels which are rotatably mounted on a main frame of the escalator respectively at each end thereof. Either one of the two sprocket wheels is operatively connected to a suitable actuating power source. Each of step means includes a desired number of crescent-shaped vertical plates spaced one from each other similarly to comb teeth so as to eliminate the need of feathering action of each step means during operation even when the portable escalator is used at different inclinations.

3,834,515
RAPID ACTION ARTICLE TRANSFER APPARATUS

Miles S. Bajcar, Palos Hills; Gary Leonard Wallace, Oak Lawn, and John J. Linehan, Arlington Heights, all of Ill., assignors to Chemetron Corporation, Chicago, Ill.

Filed Sept. 28, 1972, Ser. No. 293,157
Int. Cl. B65g 47/00
U.S. Cl. 198—27 **9 Claims**



Apparatus for rapidly transferring successively deposited groups of material such as sliced food product from a platform such as a scale platform to a conveyor or the like. The platform is provided with a plurality of slots to accommodate the fingers of a pickup platen which moves upwardly to pick up material on the platform and after pickup moves laterally away from the platform to deposit the material at a remote location on a downward stroke. After depositing the material the platen moves back toward the platform for the next pickup

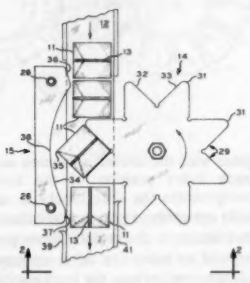
and thus travels in a repetitive pattern resembling a parallelogram for each pickup of material. A stop member is provided to move with the platen and prevent the material from jumping off the platen during pickup and lateral movement away from said platform.

3,834,516

APPARATUS FOR ROTATING ARTICLES ON A MOVING CONVEYOR

Eugene F. Reeser, Hicksville, N.Y., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 2, 1973, Ser. No. 320,499
Int. Cl. B65g 47/24
U.S. Cl. 198—283 **8 Claims**



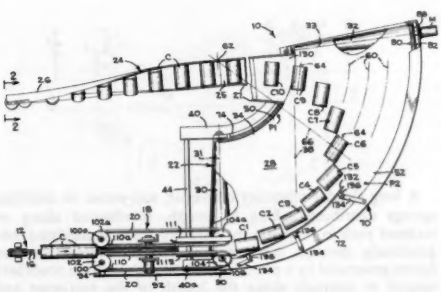
A star wheel and a cam element are mounted on opposite sides of a conveyor belt so that articles being transported by the belt engage the star wheel, causing the rotation of the star wheel and the article. The cam element forces the article to remain in engagement with the star wheel until the article has been rotated substantially 90°.

3,834,517

HIGH SPEED CONTAINER ORIENTING MECHANISM

James L. Reimers, Saratoga, Calif., assignor to FMC Corporation, San Jose, Calif.

Filed Jan. 22, 1973, Ser. No. 325,680
Int. Cl. B65g 47/24
U.S. Cl. 198—33 AC **3 Claims**



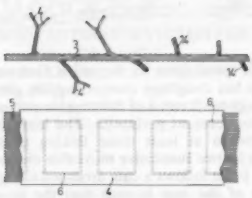
An orienting mechanism including an inclined endless belt having inlet and outlet paths substantially 180 degrees apart for reorienting cylindrical containers of steel, glass, aluminum, etc., delivered in end to end abutting relation, for discharge in single file upright position, at relatively high rates; the containers do not impact one another, or any fixed structure. This preserves seal integrity and assures that the sterile environment of the product is maintained.

3,834,518

ELECTRICAL CONDUCTOR ELEMENT FOR CHECKING POSSIBLE DAMAGE TO CONVEYOR BELTS, AND CONVEYOR BELT EQUIPPED WITH SUCH CONDUCTOR ELEMENT

Hans Specht, Northeim; Bruno Kroll, Ronnenberg, and Alfred Gruttner, Harenberg, all of Germany, assignors to Continental Gummi-Werke Aktiengesellschaft, Hannover, Germany

Filed Oct. 2, 1973, Ser. No. 402,748
Int. Cl. B65g 15/30; H01b 5/08; B65g 43/02
U.S. Cl. 198—40 **10 Claims**



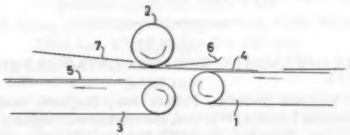
An electric conductor element for insertion into a conveyor belt for checking possible damage thereto, such as slits and cracks, which includes a metallic wire cable comprising a plurality of wire strands and being shaped in the form of a loop while having its ends spliced together over a length of from one-twentieth to approximately one-tenth of the circumference of the finished loop. The spliced strand ends are twisted to each other and protrude laterally from the remainder of the conductor element. The invention also includes a conveyor belt of elastomeric material having reinforcing strength carriers extending in the longitudinal direction of the belt and spaced from each other in a direction transverse to the longitudinal direction of the belt, while a plurality of loop-shaped conductor elements of the above-mentioned type are imbedded in the belt and located in a plane at least approximately parallel to the surface of the belt and in spaced relationship to the strength carriers, said loop-shaped conductor elements being distributed over the length of the belt in spaced relationship to each other.

3,834,519

MAGNETIC CONVEYOR

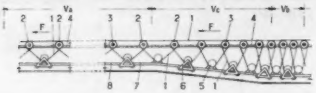
Yoshio Kitazawa; Ikuji Ariyoshi; Masato Nagawa, and Kenji Terai, all of Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Apr. 14, 1972, Ser. No. 243,938
Claims priority, application Japan, Apr. 15, 1971, 46-28956
Int. Cl. B65g 47/24
U.S. Cl. 198—41 **3 Claims**



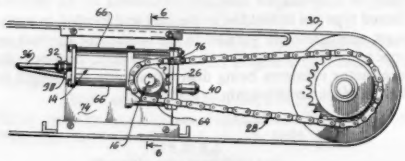
A magnetic conveyer comprising a pair of pulleys, a belt around the pair of pulleys, a plurality of magnetic rail pieces fixedly arranged inside the belt, and a magnet rail extending across the width of the belt and rotatably supported at a supporting point so that it may taken any desirable angle to the axial line of the conveyer.

3,834,520
VARIABLE SPEED DRIVE SYSTEM
Pierre Patin, 9 rue Nicolas Houel, 75005 Paris, France
Filed June 5, 1973, Ser. No. 367,120
Claims priority, application France, June 30, 1972, 23811, Fraace, Oct. 13, 1972, 36260
Int. Cl. B65g *63/00*
U.S. Cl. 198—110 **19 Claims**



A variable speed drive for moveable elements guided along a trajectory has couplings connecting the elements in pairs. The couplings are formed of deformable polygonal loops having the same constant perimeter. The loops are mounted in tension between at least three linking points are carried respectively by two successive moveable elements and at least one linking point follows a cam arranged along the trajectory. The profile of the cam is such that the moveable element move toward and away from each other in the regions of deceleration and acceleration. Some of the linking points are formed by pivotable and/or slidable members to allow free formation of the polygonal loops.

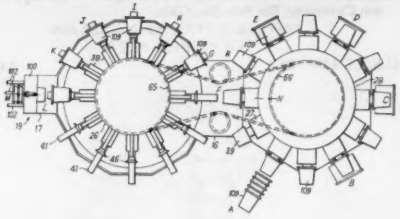
3,834,521
AIR DRIVE FOR CONVEYOR
Richard A. Rauch, Woodbury; George Camas, Scarsdale, and Elliott Shulman, East Northport, all of N.Y., assignors to CPE Industries, Inc., Queens, N.Y.
Filed May 15, 1972, Ser. No. 252,994
Int. Cl. B65g *23/00*
U.S. Cl. 198—203 **6 Claims**



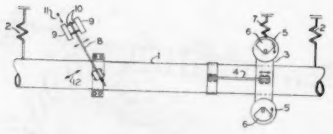
An air drive for a conveyor comprising an air cylinder having air entry ports at each end and a valve to control air flow into the cylinder. The valve is actuated by a cam which is mounted on a crankshaft attached to the piston rod. As the piston reciprocates in the cylinder the cam oscillates, changing the operational position of the valve in accordance with the position of the piston. Also mounted on the crankshaft is a unidirectional clutch which in turn drives a conveyor in interrupted single direction motion.

3,834,522
TAKE OFF AND STACKER FOR CONTAINER PRINTING MACHINE
John Maxwell Jackson, Potters Bar, England, assignor to Chromax Limited, Watford, Hertfordshire, England
Filed Feb. 16, 1973, Ser. No. 332,799
Claims priority, application Great Britain, Feb. 17, 1972, 7419/72
Int. Cl. B65g *47/91, 47/52*
U.S. Cl. 198—210 **7 Claims**

A transfer machine which grips containers printed at high speed with volatile ink, holds each container for a period of time sufficient to allow the ink to dry, and then feeds the container into a stacking device. The transfer machine comprises a turret and a plurality of carriages mounted on and spaced around the turret, each carriage being movable radially on the turret and fitted with a suction head for gripping a container. The transfer machine is driven in synchronism with the printing machine so that the turret is indexed to register each carriage in turn with the unloading station of the printing machine and subsequently with the stacking device. Slide blocks on the base of the transfer machine engage the carriages in register with the unloading station and the stacking device at each index position of the turret, and cam mechanism reciprocates the slide blocks so as to move one carriage radially outwards to grip the container at the unloading station and return to the radially inner position carrying the container, and to move the other carriage radially outwards to feed its container into the stacking device. The time delay in transferring each container from the printing machine to the stacking device depends on the number of times the turret is indexed during this transfer.



3,834,523
CONVEYOR GUIDED BY DYNAMIC VIBRATION ABSORBERS
Robley W. Evans, Louisville, Ky., assignor to Rexnord, Inc., Milwaukee, Wis.
Filed Feb. 24, 1972, Ser. No. 229,158
Int. Cl. B65g *27/00*
U.S. Cl. 198—220 CA **1 Claim**

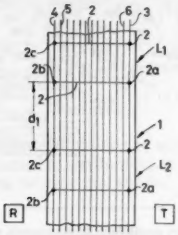


A long slender vibratory conveyor, supported on isolation springs distributed along its length, is vibrated along an inclined path in response to vibratory force transmitted longitudinally through the conveyor and transverse vibratory forces generated by a plurality of dynamic vibration absorbers spaced at intervals along the length of the conveyor and oriented to suppress vibration normal to the desired inclined path. To reduce the effect of the dynamic vibration absorbers, the absorbers have, in the direction of the inclined path, natural frequencies that are substantially different from the operating frequency of the conveyor. In the event the natural frequency of the conveyor, vibrating laterally as a free beam, is near the operating frequency, the spacing of the dynamic absorbers is selected to locate at least some of the absorbers at antinodes of the lateral vibration.

3,834,524
CONDUCTOR LOOPS FOR ASCERTAINING DAMAGE IN STEEL CABLE REINFORCED CONVEYER BELTS

Walter Ratz, Gelsenkirchen, and Willy Laval, Saarbrucken, both of Germany, assignors to Bergwerksverband GmbH, Essen, Germany

Filed May 31, 1972, Ser. No. 258,426
Claims priority, application Germany, July 21, 1971, 2136347
Int. Cl. B65g *43/00*
U.S. Cl. 198—232 **9 Claims**

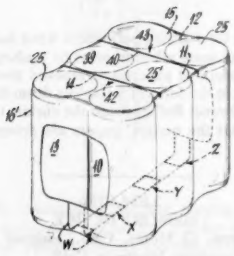


An arrangement for ascertaining damage in a steel cable reinforced conveyer belt in which a plurality of conductor loops are arranged spaced from each other along the conveyer belt and in which each of the conductor loops is formed by a pair of conductor bridges and portion of two different cables of the belt between opposite ends of the bridges which are respectively electrically and mechanically connected to these cables. Damage of any of these bridges will result in signals in a receiver device outside the belt and electromagnetically coupled with the loops, when the damaged loop is located within the effective range of a transmitter and a receiver device.

3,834,525
SHRINK-PACKAGE CONSTRUCTION

Nicholas V. Morgese, Garnerville, N.Y., and Robert H. Ganz, Saddle River, N.J., assignors to Ganz Brothers, Inc., Bergenfield, N.J.

Filed Aug. 10, 1972, Ser. No. 279,718
Int. Cl. B65d *71/00*
U.S. Cl. 206—161 **3 Claims**



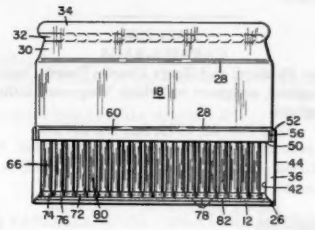
The invention contemplates use of heat-shrinkable plastic film for the packaging of clusters of containers, such as cylindrical beverage cans of a given size, and clustered in a pattern, as in the familiar "2×3 six-pack," for which at least one dimension comprises a plural odd-integer number of containers. As described herein, the film is s circumferential wrap from a sheet, wherein ends of the sheet establish a region of overlap at the bottom of the cluster, the direction of wrap being such as to establish upstanding side panels along clusters sides characterized by the plural odd-integer number. The top panel is characterized by two like parallel slits which are spaced substantially to the extent of the container diameter, the slits extending in the wrap direction and symmetrically straddling the center of the cluster.

By performing the slitting operation after the shrinking operation, there is negligible exposure of the containers to dust or contamination via the slits, yet the slits define a simple and highly effective "handle" for central and correct application of lifting effort, in unit-handling portability of the package.

3,834,526
CONTAINER AND PARTIONING SYSTEM FOR TUBULAR OBJECTS

Anthony R. Zine, Jr., Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Mar. 13, 1972, Ser. No. 234,069
Int. Cl. B65d *85/42, 25/14, 5/22*
U.S. Cl. 206—437 **3 Claims**



A container and partitioning system for tubular objects including a container structure, partitioning means, a plurality of stoppered tubes and a compression member. The container structure includes opposed side panels, rear panels, a bottom panel, a top panel and a pivotal front panel. The partitioning assembly, housed in the container, includes a partitioning means, having a series of predetermined spaced depressions or apertures, adjacent to the container rear panel, and a plurality of blood collection tube assemblies having a closure with a flanged portion, the diameter of which is greater than that of the collection tube. The partitioning means depressions are adapted to permit the spaced insertion of the collection tube bottom ends, while adjacent ones of the parallel tubes are adapted to abut on the peripheral surfaces of their flanged portions, thus permitting spaced partitioning of the collection tube assemblies. The compression member, preferably of resilient material, restrains the assemblies against axial movement during shipment thereof.

3,834,527
DISPOSABLE OIL DRIP PAN

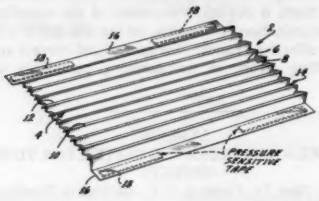
Gerald F. Howe, 6510 State, Huntington Park, Calif. 90255

Filed Apr. 27, 1973, Ser. No. 355,068
Int. Cl. B65d *69/00, 85/00;* **F16n** *31/02*
U.S. Cl. 206—494 **5 Claims**

A disposable oil drip pan formed of a stiffened oil-resistant material which includes a plurality of interconnected accordion folds. Each of the accordion folds includes a pair of side walls and a ridge formed at the intersection of the pair of side walls with each accordion fold being movable between a flattened position with the side walls in contacting relation and an open position with the side walls inclined upwardly toward the ridge.

A plurality of valleys are formed in the oil drip pan with each valley being positioned between an adjacent pair of accordion folds. Each valley is formed by the intersection of a side wall of one accordion fold with a side wall of an adjacent

accordion fold and foldable gusset closures are positioned at the ends of each of the valleys. The gusset closures are shaped and positioned to close the ends of the valleys with the accordion folds in an open position and to lie flat between adjacent



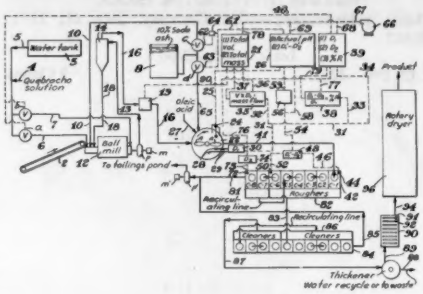
accordion folds when the accordion folds are in a flattened position. Means are also provided to retain the accordion folds in an open position with the oil drip pan positioned on a supportive surface.

3,834,528
CARRIER-BAGS
Nigel Evans Pickford, and Henry Charles Deards, both of Welwyn, England, assignors to British Visqueen Limited, London, England
Filed Feb. 22, 1972, Ser. No. 227,807
Claims priority, application Great Britain, Mar. 5, 1971, 6108/71, Great Britain, Apr. 30, 1971, 12342/71, Great Britain, June 10, 1971. 19891/71
Int. Cl. B65d *85/00, 33/02, 33/08*
U.S. Cl. 206—526 **9 Claims**

A carrier-bag formed from a rectangular sheet of flexible material, e.g., plastics film, by securing two opposite edges each in pleated or bunched form, such that goods to be packed may be stacked upon the flat, empty bag and the bag opened out around the goods, and carried by handles provided towards the other pair of opposite edges.

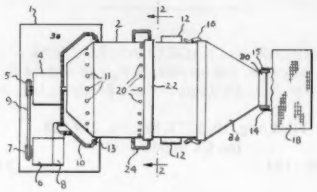
3,834,529
DEVICE AND METHOD OF DENSITY MEASUREMENT AND CONTROL OF FLOTATION SYSTEMS
Porter Hart, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.
Filed Jan. 20, 1972, Ser. No. 219,221
Int. Cl. B03b *9/00, 13/00*
U.S. Cl. 209—1 **8 Claims**

Two open-end tubes are vertically immersed, open-end down at substantially the same level, one near the place of entrance of a liquid in process in a series of treating vessels and the other near the outlet of the liquid whereby densities of the liquid at the respective locations are measured by means of a suitable pneumatic assembly, the density values are translated to and recorded as a pneumatic pressure differential and the pneumatic pressure differential is either (1) automatically converted to and recorded in meaningful values and the indicated adjustments manually made to restore and tend to maintain the optimum density differential, or (2) directed to



an optimizer whereby optimum adjustments are automatically made to restore and tend to maintain a maximum density differential. Where a fluctuating level of liquid exists, two probes immersed at different depths to define a fixed stratum may be used in cooperation to obtain one density value.

3,834,530
PERMANENT WAVE HAIR ROLLER WASHER
Verna S. Bell, 6707 Concord Hill, Louisville, Ky. 40228
Filed Nov. 7, 1972, Ser. No. 304,405
Int. Cl. B07b *4/06*
U.S. Cl. 209—3 **4 Claims**

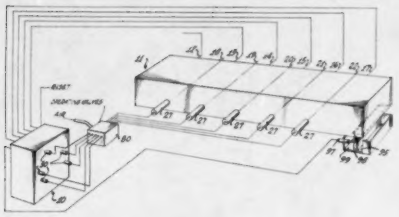


An apparatus for washing permanent wave hair rollers and method for using same wherein prior to washing said rollers wave solution saturated papers are removed therefrom in the washer which is in the form of a rotating drum through which a blast of air is forced. Baffles cause the curlers to fall into the air stream so that the curlers' papers are driven into an exhaust cannister.

3,834,531
MEMORY DEVICE
Johannes Bollerup, El Monte, Calif., assignor to Anja Engineering Corporation, Monrovia, Calif.
Filed Apr. 27, 1973, Ser. No. 355,165
Int. Cl. B07c ; H01h *43/00*
U.S. Cl. 209—74 M **21 Claims**

A memory device and a method for selectively controlling the processing of articles in an automated machine performing a sequence of processing steps on the articles as they are moved through successive work stations on the machine. A wheel carries a number of uniformly spaced pins around its circumference, and is indexed in unison with the processing machine, each article being associated with a corresponding pin for the sequence of processing steps. A pin is moved to a

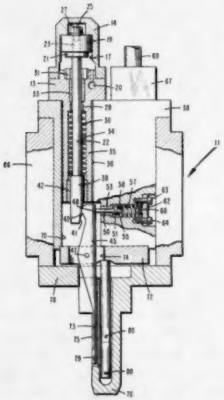
new position with respect to the wheel on detection of an abnormality in the corresponding article; and is subsequently detected as being in this new position by appropriately disposed microswitches coupled to mechanisms to control subsequent processing steps on the abnormal article.



3,834,532
DEVICE FOR TRANSPORT AND GAUGING OF MECHANICAL PIECES PARTICULARLY USED ON AUTOMATIC MEASURING MACHINES

Sergio Solaroli, Bologna, Italy, assignor to Finike Italiana Marposs-Soc. In Accomandita Semplice di Mario Possati & C.

Filed May 9, 1973, Ser. No. 358,596
Claims priority, application Italy, May 9, 1972, 3419/72
Int. Cl. B07b *13/04*
U.S. Cl. 209—82 **4 Claims**



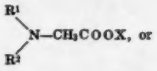
A device for transporting and size gauging of mechanical pieces which includes a mechanical arm for the support and displacement of a piece grasping and measuring unit which is constituted of a measuring means defining a plug with feelers and a grasping unit formed of grasping elements movable by corresponding operating means to an operating position and back to a rest position. The grasping elements are composed of at least one shaped rod pivoted on a plug supporting shell and having an end inserted in the plug provided with mechanical piece hooks facing an opening of the plug with the rod cooperating with a first pushing element to pivot into contact with the mechanical piece. The rod also cooperates with a second pushing element which biases the rod to a position of rest.

3,834,533
CONCENTRATION OF OXIDE COPPER ORES BY FLOTATION SEPARATION

Stephen E. McGuire; John C. Stauter, and Carl D. Kennedy, all of Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Filed Sept. 11, 1972, Ser. No. 288,200
Int. Cl. B03d *1/02*
U.S. Cl. 209—166 **9 Claims**

Oxide copper ores in subdivided form may be concentrated in a flotation separation process by slurrying said ores in an aqueous solution of a flotation reagent followed by generating gas bubbles in the slurry to float the oxide copper and recovering the concentrated oxide copper from the surface of the slurry, wherein the floatation reagent is

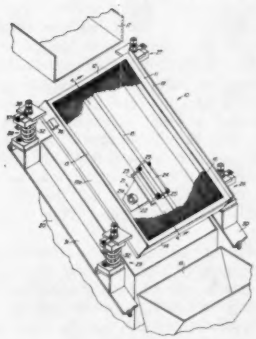
(I) 

II. condensation reaction products of
A. polybasic amines of the structure $H_2N(CH_2CH_2NH)_nH$, and
B. organic halides of the structure R^2Y

3,834,534
VARIABLE MODE VIBRATORY SCREEN

Thomas D. Peterson, and Ralph W. Crosser, Jr., both of Salt Lake City, Utah, assignors to Kennecot Copper Corporation, New York, N.Y.

Filed Dec. 20, 1971, Ser. No. 209,629
Int. Cl. B07b *1/28, 1/42*
U.S. Cl. 209—326 **6 Claims**



A variable mode vibratory screen for screening and conveying particulate matter and for varying the mode of vibration during the screening operation preferably includes a frame, screen cloth mounted on the frame, and springing means attached to the frame for resiliently supporting the frame on a load-bearing surface. Means for imparting vibratory motion to the screen is mounted on the frame, preferably on a longitudinal structural member extending the length of the underside of the frame. Control means connected to the vibratory means

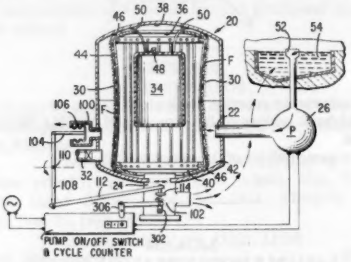
varies the vibratory mode of the screen during operation. The mode can be varied between high frequency, low amplitude vibration and high amplitude, low frequency vibration to effect optimum screening efficiency and high acceleration of the particulate matter across the surface of the screen. The vibrational modes can be varied, for example, by automatic sequencing through a preselected series of modes, or by a sensing device which senses any lessening of the amplitude of vibration caused by the build-up of particulate matter on the screen and signals a control mechanism to change the vibrational mode.

3,834,535

SWIMMING POOL FILTERING SYSTEM

Raymond E. Portyrata, North Haven, Conn., assignor to Diaclear, Inc., Hamden, Conn.

Filed Aug. 9, 1972, Ser. No. 279,281
Int. Cl. B01d *37/02, 23/24*
U.S. Cl. 210—75 **11 Claims**



A filtering system is disclosed including a filter tank, a pump for directing liquid through an inlet into the tank and a liquid outlet formed for directing liquid from the tank to a swimming pool, or the like. A particulate filter may be disposed between the inlet and outlet of the tank and may generally comprise a layer of filter particles disposed on an upstream side of a porous, filter substrate member. Apparatus is included for automatically homogenizing the filter particles with the dirt deposits, captured on and within the filter. The automatic apparatus may include an expansible/compressible member disposed adjacent the filter substrate on a downstream side thereof. A valve may be disposed within the outlet of the tank and, upon closing the valve and operating the pump to force water through the inlet, the expansible/compressible member may be compressed to within a fraction of its original volume. The pump may then be suddenly shut off so as to cause the expansible/compressible member to suddenly expand, to force water in an upstream direction through the filter substrate, so as to knock the filter particles off the substrate and to generally evenly mix (homogenized) filter particles with the captured dirt.

A waste outlet may be provided, and, upon the completion of a desired number of automatic homogenizing cycles, the waste outlet may be opened and the pump used to pump all the dirt carrying filter particles out through the waste outlet. Thereafter, new filter particles may be transmitted through the pump to the upstream side of the filter substrate.

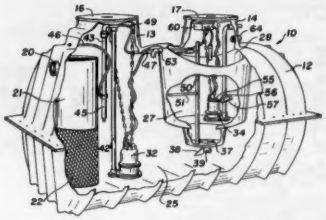
3,834,536

AEROBIC WASTEWATER TREATMENT APPARATUS

Harley E. Kelsey, North Vancouver, British Columbia, Canada, assignor to Northern Purification Services, Ltd., North Vancouver, British Columbia, Canada

Filed Oct. 10, 1973, Ser. No. 405,156
Int. Cl. B01d *21/24*
U.S. Cl. 210—104 **19 Claims**

Apparatus for treating wastewater including a settling chamber within an aeration chamber, a valve-controlled outlet at the bottom of the settling chamber, a pump for directing liquid from the aeration chamber into the settling chamber, a pump in the settling chamber for directing supernatent liquid out of the apparatus, and control means for the pumps to operate said pumps sequentially to direct liquid from the aeration chamber into the settling chamber, and after a predetermined settling period, to pump supernatent liquid out of the latter chamber. The apparatus includes valve means at the bottom of the settling chamber operable to discharge sludge therefrom.

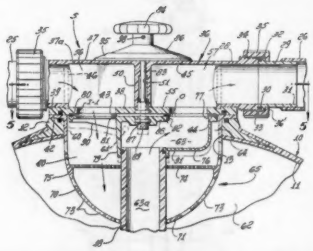


3,834,537

HIGH THROUGHPUT FILTER HAVING MULTIPOSITION VALVE

James E. Brett, Redondo Beach, Calif., assignor to Purex Corporation, Ltd., Lakewood, Calif.

Continuation-in-part of Ser. No. 305,172, Nov. 9, 1972,. This application June 29, 1973, Ser. No. 375,010
Int. Cl. B01d *23/24*
U.S. Cl. 210—136 **21 Claims**



Filter for swimming pool water in which multiple operational modes including filtration, backwash and rinse modes are achieved with a valve structure affording positive sealing during operation, positive locking into mode, and adjustment between modes without frictionally wearing critical seals in the valve, and positive sealing at the waste discharge against air flow into the filter. The filter valve structure further employs large ports and direct flow passages to provide low pressure drop, even at very high flow rates through the filter, and a novel water distributor to avoid turbulence and undue disruption of the filter medium during filtration.

3,834,538

FLOATING ANTI-POLLUTION APPARATUS

Joseph Richard Laman, Akron, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Oct. 10, 1972, Ser. No. 296,411
Int. Cl. B01d *33/00;* **E02b** *15/04*
U.S. Cl. 210—154 **1 Claim**

Floating apparatus to be anchored across a polluted stream to skim the water and collect the debris. The apparatus in-

cludes a floating boom anchored within abutments by means which also provide barrier seals. The upstream side of the boom presents a baffle surface. Adjacent the baffle surface a

series of paddle means skim the water and collect the debris. At one end of the boom the paddle means traverse a ramp. The coaction of paddle means against the ramp moves skimmed liquids and collected debris to a sump.

3,834,539

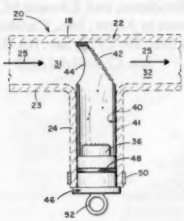
TRAP FOR REMOVING SOLID PARTICLES FROM A LIQUID CIRCULATING SYSTEM

Claude W. Thompson, 654 Shawnee, Houston, Tex. 77034

Filed Dec. 26, 1972, Ser. No. 318,140

Int. Cl. B01d *29/36*

U.S. Cl. 210—167 **2 Claims**



This invention relates to a trap for removing solid particles from a liquid flowing in a conduit. The trap comprises a filter element disposed across the conduit at an angle sloping rearwardly with respect to the direction of liquid flow in the conduit. A receptacle communicates with the conduit rearwardly adjacent to the lower end of the filter element.

3,834,540

COMBINED APPARATUS FOR THE BIOLOGICAL PURIFICATION OF WASTE WATERS

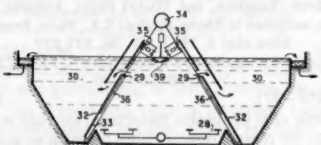
Jacques J. P. Bernard, Saint Germain en Laye, France, assignor to Degremont, Societe Generale D'Epuration et D'Assaninissement, Rueil-Naimaison, France

Filed Jan. 3, 1972, Ser. No. 214,794

Claims priority, application France, July 20, 1971, 71.26465

Int. Cl. C02c *1/08*

U.S. Cl. 210—195 **1 Claim**



Combined apparatus for the biological purification of waste waters by means of activated sludges, which comprises at least two coupled clarification tanks which are in communication with an aerator tank as well as means for recycling the settled sludges coming from the clarification tanks into the aerator tank, characterized by the fact that the means for recycling the settled sludges consist of air pumps of the "air-lift" type which discharge into the aerator from each of the clarifiers and which are fed with air with a pulsating intermittent flow, alternating in each of the clarifiers, which causes a pulsating recirculation of the settled sludges, alternately from each of the clarifiers towards the aerator. The air-lifts are so developed that they have a base which is flared with respect to their top, said base constituting the orifice thereof for the drawing in of settled sludges which are to be recycled.

3,834,541

APPARATUS FOR THE SEPARATION OF SUSPENDED SOLIDS FROM LIQUIDS

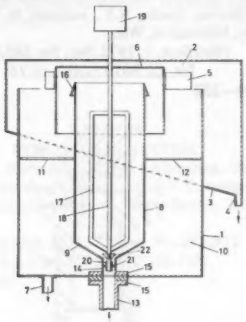
John Trethowan Rundell, Keston, and Paul Richmond Pottage, Stockton, England, assignors to Tate & Lyle Limited, London, England

Filed June 19, 1972, Ser. No. 263,785

Claims priority, application Great Britain, June 22, 1971, 29223/71

Int. Cl. B03d *1/24*

U.S. Cl. 210—219 **8 Claims**



Apparatus for separating flocculated solids from a liquid by flotation-clarification comprises: a separator chamber; a flocculator chamber centrally located within the separator chamber; a trough surrounding the top of the separator chamber; liquid inlet means located at the bottom of the flocculator chamber; liquid agitating means located within the flocculator chamber; means allowing floc-containing liquid to flow with minimal agitation from the top of the flocculator chamber into the separator chamber; means for transferring floating flocculated solids from the top of the separator chamber to the trough; and solids outlet means located at the bottom of the trough.

3,834,542

MAGNETIC SEPARATOR AND CONVEYOR

Charles A. Linstruth, Jackson, Mich., assignor to Van Straaten Chemical Company, Chicago, Ill.

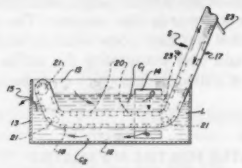
Filed Aug. 9, 1972, Ser. No. 279,030

Int. Cl. B01d *35/06*

U.S. Cl. 210—222 **7 Claims**

A magnetic separator-conveyor apparatus is provided for removing or separating ferrous matter entrained in a liquid such as cutting oils, machine tool coolants, and the like. The apparatus utilizes a plurality of spaced magnets carried on an endless chain drive or the like, which in turn is mounted for relative movement within an elongated housing having a substantially-non-magnetic elongated slide surface. A portion of

the housing adjacent one extremity is normally submerged in the liquid to be magnetically cleansed and the remainder of the housing rises at an angle from the liquid. The ferrous matter in the liquid is magnetically attracted to the submerged portion of the slide surface and moved along the slide surface so as to be elevated out of the liquid as the spaced magnets



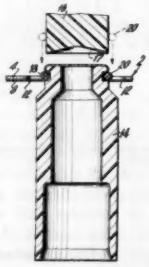
move relative to the interior side of the slide surface. The normally-submerged portion of the housing features a novel saucer-shaped configuration which in conjunction with the novel double-chamber design of the reservoir for the liquid to be cleansed, increases the active separation surface, provides for double-pass operation and improves separation efficiency.

3,834,543

MEMBRANE MOUNTING ASSEMBLY AND METHOD

Alfred E. Dreves, Scotia, N.Y., assignor to General Electric Company, Milwaukee, Wis.

Filed Sept. 1, 1972, Ser. No. 285,653
Int. Cl. B01d *31/00, 39/16*
U.S. Cl. 210—232 **20 Claims**



There is provided a membrane mounting assembly comprising a frame having a membrane-covered central opening and a selectively rupturable border, e.g., perimeter of perforations in the membrane, within the opening. The membrane is mounted on the open end of a hollow cylindrical structure, such as an electrode holder, without tearing and the need to trim any excess, by centering such an assembly over the structure, fixing the membrane to the open end, e.g., by locking in an annular recess with an annular gasket, and tearing the frame and excess membrane away from the structure along the selectively rupturable border.

3,834,544

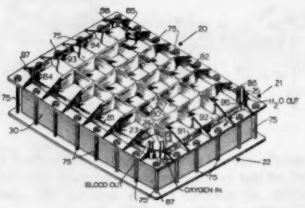
MEMBRANE DIFFUSION APPARATUS

William H. Tyson, Jr., Moraga, and Mogens L. Bramson, San Francisco, both of Calif., assignors to Cutter Laboratories Inc., Berkeley, Calif.

Filed July 6, 1971, Ser. No. 159,589
Int. Cl. B01d *31/00*
U.S. Cl. 210—321 **38 Claims**

Membrane diffusion apparatus for use as a blood oxygenator, dialyzer, or for general diffusion or heat transfer purposes.

One example is a disposable blood oxygenator comprising a plurality of frames, membranes, and screens which when stacked and clamped together, form cells for a three-fluid system, blood oxygen, and water. Each fluid has frames and membranes, some of which may have shaped identical to those for another fluid, and the frames and membranes are



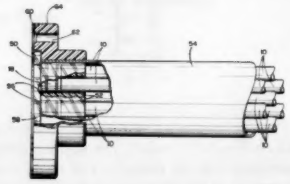
provided with manifold slots for the independent uniform distribution of each fluid to and from its respective fluid system. Similar structures may be used in a three-fluid dialyzer, while a four-fluid system for both oxygenating and dialyzing may employ the same basic principles.

3,834,545

SUPPORTED TUBULAR MEMBRANE

Joseph Del Pico, Brockton, and Edward M. Shea, Saugus, both of Mass., assignors to Abcor, Inc., Cambridge, Mass.

Filed Feb. 20, 1973, Ser. No. 333,804
Int. Cl. B01d *31/00*
U.S. Cl. 210—321 **18 Claims**



A tubular membrane is provided, the open end of the tubular membrane having a generally U-shaped elastomeric membrane boot, the inner wall of the boot extending over the semipermeable membrane on the interior of the support tube, the exterior wall of the boot containing two integral gasket ridges, and the membrane boot secured in position to the interior wall of the support tube. The tubular membrane is readily adapted to be installed in a sealing relationship within a singular shell, or within a multitube modular housing in a membrane system.

3,834,546

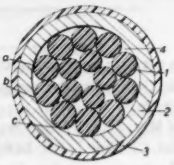
SEMI-PERMEABLE TUBULAR ASSEMBLY

Robert Brun, Vaucluse, and Michel Pages, Ardeche, both of France, assignors to Rhone-Poulenc S.A., Paris, France

Filed May 4, 1973, Ser. No. 357,227
Claims priority, application France, May 5, 1972, 72.16107
Int. Cl. B01d *31/00*
U.S. Cl. 210—321 **8 Claims**

A flexible semi-permeable membrane, for fluid separation apparatus, for reverse osmosis, ultra-filtration or gas separation, including a cord comprising a plurality of longitudinally extending yarns forming a core and a knitted woven or braided textile sheath surrounding the core. A semi-permeable membrane surrounds the cord, the core of which communicates with the exterior near at least one of its ends. In the manufacture of the assembly the cord is passed through a

heated cylindro-conical tube to calibrate and smooth the sheath and is impregnated with water. The cord is then coated

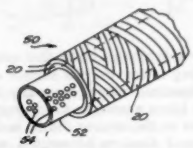


with a collodion the solvent of which is evaporated to form the semi-permeable membrane and the water is at least partly removed.

3,834,547
FIBROUS PRODUCT

Armen Renjilian, Albany, N.Y., assignor to Albany International Corp., Albany, N.Y.

Division of Ser. No. 264,302, June 19, 1972, , which is a continuation-in-part of Ser. No. 850,747, Aug. 18, 1969,. This application July 16, 1973, Ser. No. 379,320
Int. Cl. B01d *27/00*
U.S. Cl. 210—497.1 **6 Claims**



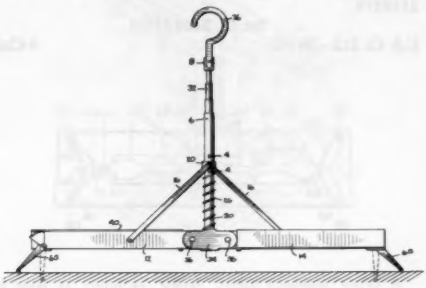
An improved roving capable of being mechanically worked without first forming a yarn is disclosed. The improved roving is in the form of a strand of staple fibers prepared in accordance with customary textile carding process. The formed roving is treated with a resin binder and, when cured, the fibers resemble a reticulated network. The fibers are disoriented and cross over one another at a multiplicity of points to form bonding sites at the cross-over point when the resin is cured, while maintaining the fibers spacially separated between the bonding sites. The thus treated roving is found to have good flexibility and abrasion resistance while providing the roving with unexpected tensile strength, increased elasticity, permeability, void volume and porosity even when the roving is subjected to compressive forces as compared with untreated roving subjected to the same forces.

3,834,548
COLLAPSIBLE SUPPORT UNIT FOR A GARMENT BAG OR THE LIKE

Ethan W. Cliffton, 307 W. 106 St., New York, N.Y. 10025, and Matthew J. Culligan, Polly Park Rd., Rye, N.Y. 10580

Filed Oct. 26, 1972, Ser. No. 301,086
Int. Cl. A47f *5/10*
U.S. Cl. 211—118 **13 Claims**

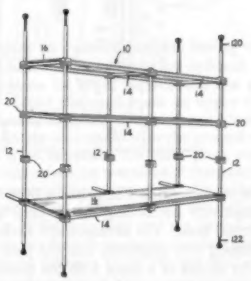
A collapsible support unit for supporting a generally flat object, such as a garment bag, in vertical disposition above the ground. The support unit includes an upright vertical shaft having a connection at its upper end for releasably engaging an upper end of the object to be carried. Two base legs are pivotally connected to the lower end of the shaft and are movably between a retracted position lying against the shaft and an extended position extending generally horizontally, in opposite transverse directions, in which the base legs are adapted to rest on the ground. Two base feet are provided, each being pivotally connected to a free end of an associated one of the base legs. In a folded position each base foot lies against its associated base leg. A mechanism associated with each base foot moves it between its folded position and an unfolded position in which the base foot extends generally horizontally at an outward inclination from its associated base leg, as the base leg moves between its retracted and extended positions, respectively.



3,834,549
STRUCTURAL SYSTEM

Robert J. Burg, Hartsdale; Milton Lieberman, Blauvelt, and Armand A. Fiorenza, Wantagh, all of N.Y., assignors to Gordon Tube Products Company, Inc., Bronx, N.Y., by said Lieberman

Filed Sept. 25, 1972, Ser. No. 291,972
Int. Cl. A47f *5/00*; F16b *7/00*
U.S. Cl. 211—148 **21 Claims**



A structural system in which a three-dimensional framework of horizontal stringers and vertical struts are connected in the region of intersection of the struts and stringers by a cube-shaped hollow connector made of two separable complementary connector parts. The connector is provided with socket passages in each of its six sides for receiving the tip ends of the struts and stringers and further has retainer means for preventing withdrawal of horizontal stringers with a fastener being employed within the connector to connect vertical struts received in the connector.

3,834,550
CRANE OVERLOAD SAFETY DEVICE WITH TEMPERATURE COMPENSATION

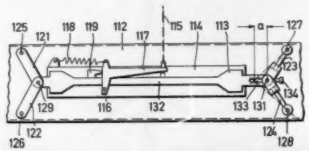
Peter Eiler, Dusseldorf-Benrath, Germany, assignor to Leo Gottwald K.G., Dusseldorf-Holthausen, Germany

Filed Apr. 14, 1972, Ser. No. 244,021

Claims priority, application Germany, Apr. 21, 1971, 2119279

Int. Cl. B66c *13/48*

U.S. Cl. 212—39 MS **9 Claims**



A crane overload safety device including at least one pivoted arm connected to a strain measuring device adapted to be fixed to a loaded part of the crane. The pivoted arm is provided with one or more photocell devices or the like and cooperates with at least one cam disc. The strain measuring device is in the form of a tension rod dynamometer both ends of which are adapted to be attached to the loaded part of the crane by multipoint suspension devices.

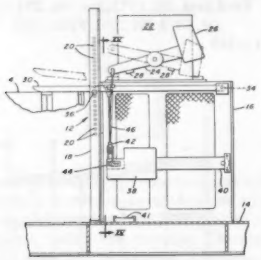
3,834,551
CONTROL FOR CRANE HOIST HAVING A LIFT RAM

John P. Nanowsky, Boardman Township, Mahoning County, Ohio, assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Sept. 27, 1973, Ser. No. 401,315

Int. Cl. B66c *13/50*

U.S. Cl. 212—39 MS **6 Claims**



Device of the invention comprises a limit switch arrangement for positively controlling the upward travel of the lift ram of a crane hoist. The arrangement includes a pivotally mounted sensing arm extending into the path of the ram and connected by means of a cable with the counterweighted actuating arm of the limit switch in the electrical circuit powering the ram-lifting mechanism of the crane hoist. A pivotally mounted elongated counterweight is connected with the intermediate portion of the cable by means of a fitting through which the cable is threaded. The counterweight normally functions to maintain the sensing arm in initial resting position and the actuating arm of the limit switch in position keeping the limit switch closed and current flowing to the ram-lifting mechanism. Means are provided on the cable between the counterweight and the actuating arm to limit movement of the cable through the fitting. In operation, lifting of the sensing arm by the top of the ram as it rises causes lifting of the counterweight and removal of cable-tension from the counterweighted actuating arm so that it may rotate to position causing the limit switch to open and interrupt flow of current to the ram raising mechanism.

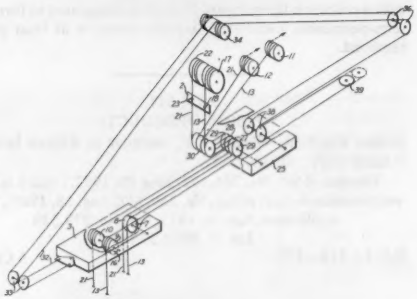
3,834,552
CRANE WITH MEANS FOR REMOVING WORN LINES

Gerard V. Lofink, Coraopolis, Pa., assignor to Heyl Patterson, Inc., Pittsburgh, Pa.

Filed Mar. 21, 1973, Ser. No. 343,373

Int. Cl. B66c *21/00*; B66d *1/76*

U.S. Cl. 212—95 **4 Claims**



A trolley, movable along a boom that extends laterally away from a supporting tower, carries anchor drums and vertical sheaves and releasable means normally locking the drums against rotation. Lines wound on supply reels supported by the tower extend out to the anchor drums and around them and then down around sheaves connected with a load carrier below the trolley. From there the lines extend up and over the trolley sheaves and then to power drums at the tower. The lines normally are prevented from unreeling from the supply reels by releasable means, but by releasing all of said releasable means the power drums can withdraw lines from the supply reels to replace with new line the used lengths of line between the anchor drums and the power drums.

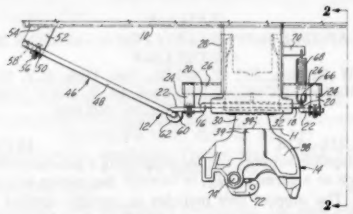
3,834,553
ROTARY OPERATED COUPLER LOCKLIFT MECHANISM

Kenneth L. DePenti, Mayfield Heights, Ohio, assignor to Midland-Ross Corporation, Cleveland, Ohio

Filed Sept. 10, 1973, Ser. No. 395,958

Int. Cl. B61g *3/08*

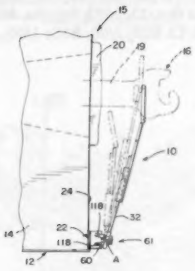
U.S. Cl. 213—166 **8 Claims**



A bottom rotary operated railway car coupler for actuation by a bail type uncoupling rod mechanism has a rotor lever with an operating arm portion engageable by the bail of the uncoupling mechanism and contoured to not only clear the car underframe without striking it when the coupler is buffed

back to its fully buffed position but to also provide sufficient clearance with the underside of the coupler head to enable rotation of the rotor lever to its full knuckle opened position in all positions of the coupler in service.

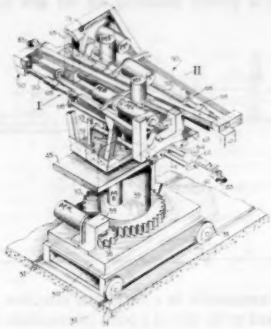
3,834,554
UNCOUPLING LEVER FOR RAILROAD CARS WITH STANDARD DRAFT GEAR CUSHIONING
Osvaldo F. Chierici, Elmhurst, Ill., assignor to Holland Company, Lombard, Ill.
Filed Nov. 1, 1973, Ser. No. 411,742
Int. Cl. B61g 3/08
U.S. Cl. 213—166 **12 Claims**



An uncoupling lever assembly for railroad cars equipped with standard draft gear cushioning, which lever assembly comprises a handle section and a lock lifter section, each including an elongate rectilinear bar, that are assembled to provide an effective operating length for the assembly that may be extended and contracted as required by coupler side swing and coupler impacts. The handle section bar has an operating handle affixed to one end of same for pivotal connection to the car, the handle section bar being unencumbered the rest of its length and to and through its other end. The lock lifter section bar has a lock lifter rod member affixed to one end of same having a hook eye adapted for a conventional application to the coupler lock lifter, and also has affixed to one side of same adjacent its other end a single channel member that defines a single slideway for the lever assembly in which the handle section bar is slidably received. The lever assembly bars are in side by side relation, with the lock lifter bar channel member slidably mounted on the handle section bar, and the handle section bar projecting through and inboard of the slideway when the coupler is in its neutral centered relation relative to the car. The result is that the portion of the handle section bar projecting inboard of the car from the slideway forms the portion of the adjuster accommodating take up and let out of the effective length of the lever assembly, as is required by coupler side swing and coupler impacts.

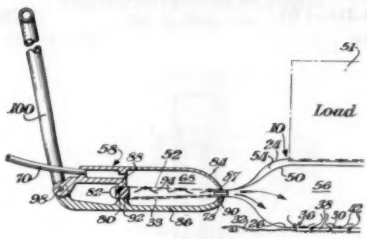
3,834,555
ARTICLE TRANSFER APPARATUS
Russell J. Bennington, Maple Glen, and Laszlo G. Szalay, Norristown, both of Pa., assignors to The Budd Company, Troy, Mich.
Filed Dec. 4, 1972, Ser. No. 312,083
Int. Cl. B65g 29/00
U.S. Cl. 214—1 BT **3 Claims**

Article transfer apparatus which has independent actions subject to programmed teach sequence and programmed teach motions for removing articles from one unit, such as a press, and moving them while positively held by a single engaging element to another fixed location or station, such as another press; the article engaging means having a bending movement, a swivelling movement, a horizontal traversing reciprocating movement, a vertical bodily elevating movement, and a turning movement about a vertical axis. In a



preferred embodiment, paired units are employed on a common turning mount to minimize press stoppage time.

3,834,556
AIR CUSHION PALLET
Arthur G. Crimmins, Wilmington, Del., assignor to All American Industries, Inc., Wilmington, Del.
Filed Feb. 1, 1973, Ser. No. 328,744
Int. Cl. B65g 61/00
U.S. Cl. 214—1 BE **13 Claims**

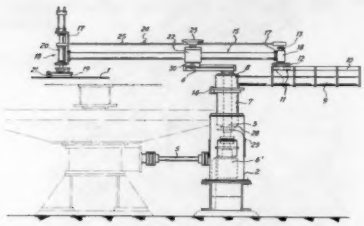


A flexible shallow air cushion chamber having valved holes in its upper and lower surfaces provided optional pressurized air cushions between its lower surface and the ground and between it and a load disposed upon its upper surface. Air pressure is optionally supplied to the upper or lower surfaces or to both to facilitate movement over the ground or to slide a load on or off it as required. Air inlet ports are provided through lateral extensions on two sides of the pallet which are grasped by an air-supplying clamp. The inlet ports are check valved, to prevent outward leakage of air if misaligned clamping should occur, by flexible flaps and the lateral sections are reinforced to prevent them from being crushed when they are clamped. The clamp includes a pair of clam shell-shaped jaws with an air hose and traversing rod connected to it. The rod is a handle or a linkage on a forklift truck.

3,834,557
AUTOMATIC HANDLING MACHINES
Julien Devillers, Livry Gargan, France, assignor to Societe C.M.V., Puteaux, France
Filed Apr. 3, 1973, Ser. No. 347,382
Claims priority, application France, Apr. 5, 1972, 72.11866
Int. Cl. B66c 1/02
U.S. Cl. 214—1 BH **9 Claims**

An automatic handling machine for transferring objects, for example vehicle windows, from one location to another com-

prises a horizontal arm pivotally mounted at one end for movement about a vertical axis. The other end of the arm is provided with means, such as a suction cup, for gripping the objects. The pivotal mounting for the arm includes a slide



which is translatable in a horizontal direction. A connecting rod is linked to the arm at a point intermediate the ends of the arm and is adapted to turn in a horizontal plane about a fixed axis.

3,834,558

PNEUMATIC ELEVATOR FOR LIFTING A SHEET OF MATERIAL

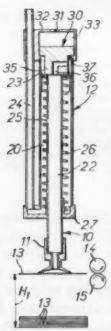
Michel Bru, Chatenay-Malabry, France, assignor to Ets. J. J. Carnand & Forges de Basse-Indre, Boulogne, France

Filed Aug. 6, 1973, Ser. No. 385,653

Claims priority, application France, Aug. 11, 1972, 72.29050

Int. Cl. B65g *59/04*

U.S. Cl. 214—1 BT **8 Claims**



Pneumatic elevator for lifting a sheet of material for introducing it between drive rollers of the type having a tubular piston with a suction nozzle at its distal end displaceable in a cylinder with which it forms an annular space. The piston moves downwards in the cylinder under the force of gravity, its upward movement with the sheet held thereby being assured by a spring. The upward movement is limited by a movable plug to a height corresponding to the position at which the sheet is to be introduced between the rollers. The plug comprising a tubular portion and two laterally extending bearing members. The plug divides the cylinder into three chambers: a first chamber to one side of a first bearing member and the open upper end of the cylinder and communicating with the atmosphere through an air filter to prevent clogging of the chamber, a second chamber to one side of the second bearing member remote from the first bearing member and adapted to communicate directly with the interior of the piston, and third chamber formed about the tubular portion between the first and second bearing members and adapted to be connected to the suction means and communicating with the interior of the piston through the pressure-drop orifice in the tubular portion. The plug acts as valve means for connecting the annular space with the suction means in the upper rest position of the plug and the atmosphere in the lower operating position of the plug. The lifting power of the pneumatic elevator is greatly increased by a substantial reduction in the force exerted upward movement by the spring.

3,834,559

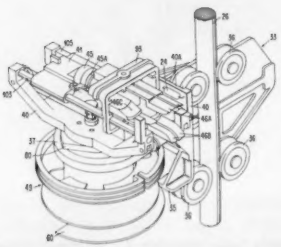
ARTICLE HANDLING APPARATUS

Donald W. Schaffer, Lakewood, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 304,698, Nov. 8, 1972. This application Oct. 23, 1973, Ser. No. 408,716

Int. Cl. B25j *3/00*; B66c *1/00*

U.S. Cl. 214—1 BT **5 Claims**



A dual storage wall automatic storage and retrieval apparatus preferably for article storage includes a novel, pivotable, article storage and retrieving device for enabling the orientation of the articles in the storage compartments to remain the same. The article handling mechanism can exchange articles at the ends of the storage arrays. Resilient and spaced-apart guiding fingers facilitate article exchange between a carriage and storage compartment.

3,834,560

POLE HOLDING AND SETTING DEVICE

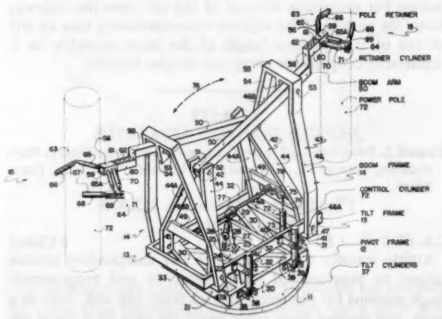
Arthur G. Miller, 165 McNab Cres., Regina, Saskatchewan, Canada

Filed May 8, 1973, Ser. No. 358,333

Claims priority, application Canada, May 11, 1972, 141849

Int. Cl. B66f *11/02*

U.S. Cl. 214—3 **24 Claims**



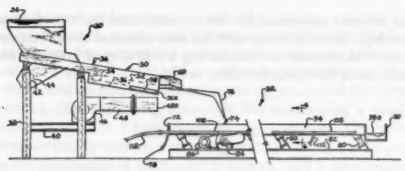
A frame is mounted on a truck or the like and includes a pair of opposed pole supporting boom assemblies. Means are

provided to adjust the relationship between the poles held by the assemblies and to straighten them so that they lie perpendicular to the horizontal. Means are also provided to align one pole with the other prior to tamping them in position in the holes pre-formed in the ground.

3,834,561
METHOD AND APPARATUS FOR SEPARATING WOOD BARK FROM GRAVEL

Gerald W. Crow, 11552 S.W. Lesser Rd., Portland, Oreg. 97219

Division of Ser. No. 362,376, May 21, 1973. This application Dec. 19, 1973, Ser. No. 425,986
Int. Cl. B02c *21/00*
U.S. Cl. 241—24 **1 Claim**



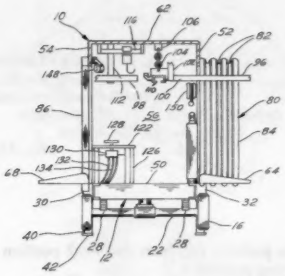
A bark and bedding gravel mixture is dumped into a hopper and moves along an inclined vibratory conveyor onto a screening section which screens limbs and other large chunks of wood from the bark-and-gravel mixture as well as sand-sized particles. The limbs and wood chunks are reduced to chips and stored for later use. The sand is conveyed to an aggregate storage site for reuse as bedding material. The bark-and-gravel mixture is dropped from an outlet of the screening section toward but short of the infeed end of a vibratory conveyor table through an air stream which blows the majority of the gravel and bark onto the table while oversize rocks fall short of the table. The bark-and-rock mixture moves through vibratory action along the table into a gravel channel which is separated from a second, bark channel by a transversely inclined rampway forming a ridge between the two channels. An air stream directed across the gravel channel toward the rampway induces the bark portion of the mixture, which forms a stratified layer over the gravel under vibration, to move up the rampway and into the bark channel as both the bark and gravel travel downstream on the table. Sand is screened from the bark near the downstream end of the bark channel after the bark has been dried. The cleaned and dried bark moves from the downstream end of the bark channel to a hog which reduces the bark chunks to a size suitable for use as fuel. The gravel moves from the downstream end of the gravel channel to the gravel storage area for reuse in bedding a log storage yard.

3,834,562
MOVABLE LOADING DOCK

Lyle W. Norrie, Etobicoke, Ontario, Canada, assignor to Swift & Company, Chicago, Ill.

Filed Aug. 22, 1973, Ser. No. 390,516
Int. Cl. B65g *67/02*
U.S. Cl. 214—38 BA **7 Claims**

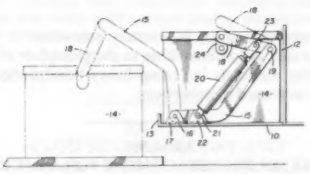
An intermediate vehicle useful as a loading dock in transferring goods between two transport vehicles comprises an enclosure mounted on wheels and having jacking means and equipped with dock boards and a system of overhead rails extendable from oppositely disposed openings for access to said transport vehicles.



3,834,563
BATTERY CARRIER

John J. Teti, Bluefield, W. Va., assignor to A-T-O Inc., Willoughby, Ohio

Filed Oct. 10, 1972, Ser. No. 296,261
Int. Cl. B60p *1/48*
U.S. Cl. 214—77 R **4 Claims**



A battery carrier for moving the batteries of mine tractors and the like into and out of a receiving compartment therefor includes pivoted arms having their free ends supporting the battery and power means for moving the arms and the battery carried thereby in an arcuate path with a minimum of vertical travel.

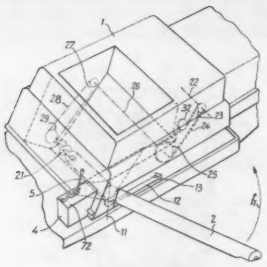
3,834,564
CONTROL DEVICE FOR THE COMBINED OPERATION OF AN UNLOADER TUBE AND AUGER CLUTCH OF A COMBINE HARVESTER

Michel A. Laurent, Villeneuve D'Ascq; Jean M. Lemoine, Wasquehal, and Georges L. Godderis, Croix, all of France, assignors to International Harvester Company, Chicago, Ill.

Filed Oct. 23, 1973, Ser. No. 408,337
Int. Cl. B60p *1/42*
U.S. Cl. 214—83.26 **9 Claims**

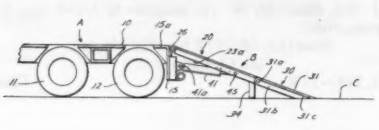
A control system for the grain auger and discharge tube of a combine harvester. A single handle may be displaced from a

central, neutral position to set the tube to a transport position,



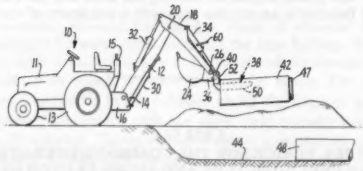
or to a work position, and from said work position only to an auger actuating position.

3,834,565
HYDRAULIC LOADING RAMP
Roy S. Goodman, Jr.; Dee Maryon Kirk, and Harvey D. Kirk, all of Denison, Tex., assignors to R. S. Goodman Company, Denison, Tex.
Continuation of Ser. No. 165,123, July 22, 1971, abandoned.
This application June 4, 1973, Ser. No. 366,990
Int. Cl. B65g 67/02
U.S. Cl. 214—85 **1 Claim**



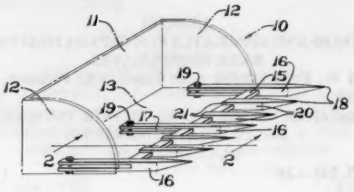
A rectractable runway is pivotally connected to the load bed of a trailer and is extendible to the ground or other load area so that materials including heavy construction equipment, can be moved therebetween.

3,834,566
PIPE HANDLING ATTACHMENT FOR A BACKHOE
William K. Hilfiker, Eureka, Calif., assignor to Hilfiker Pipe Co., Eureka, Calif.
Filed Jan. 18, 1973, Ser. No. 324,575
Int. Cl. B66f 9/00
U.S. Cl. 215—138 R **10 Claims**



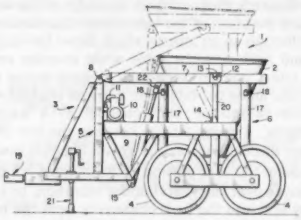
A conventional hydraulically actuated backhoe excavator adapted to handle heavy and cumbersome pipe sections by a shaft attached to and extending from the rear of the bucket such that it rotates with the bucket in the plane of the boom and stick without significantly impairing the excavating capabilities of the backhoe.

3,834,567
ADAPTER APPARATUS FOR TRACTOR
Joseph Miller, 812 Allyn St., Akron, Ohio 44311
Filed Aug. 8, 1972, Ser. No. 278,709
Int. Cl. E02f 3/70
U.S. Cl. 214—145 **3 Claims**



An adapter apparatus for the conventional bucket of a tractor or high lift which converts the conventional bucket thereof to a special purpose bucket having a plurality of prongs which handle loose barnyard fertilizer or hay.

3,834,568
PORTABLE BIN CARRIER ASSEMBLY
Clarence E. Larson; Richard H. Dawley, both of Columbus, and Roger Reese, Lancaster, all of Ohio, assignors to Martin Marietta Corporation, New York, N.Y.
Continuation of Ser. No. 59,455, July 30, 1970, abandoned.
This application July 10, 1972, Ser. No. 270,167
Int. Cl. B65g 65/04
U.S. Cl. 214—307 **5 Claims**



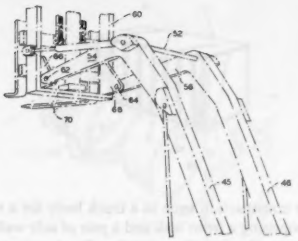
A portable bin carrier has pivotally mounted lifting arms that engage lifting lugs on the bin to be carried. The bin is raised for transport by raising the lifting arms. Support members are provided to support the lifting arms as the bin-supporting carrier is moved from one location to another. The lifting arms disengage from the bin lifting lugs upon being lowered while the bin is independently supported at its desired elevation following movement to its desired location. Telescoping legs are provided on the bin so that said bin may be independently supported at desired upper and lower elevations. Hydraulic means are provided for raising and lowering said lifting arms between upper and lower positions, including an intermediate position for support of the bin during transport and prior to elevation of the material-bearing bin to its desired higher elevation at a job site.

3,834,569

EXTENDED REACH TRUCK

Donald A. Holtkamp; Willard L. Chichester, and Robert R. Rabbitt, all of Battle Creek, Mich., assignors to Clark Equipment Company, Buchanan, Mich.

Filed Jan. 27, 1972, Ser. No. 221,346
Int. Cl. E02f 3/86
U.S. Cl. 214—762 16 Claims



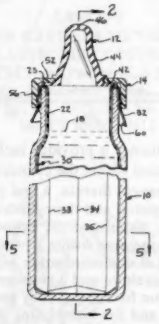
An extended reach mechanism for trucks in which the mechanism has a vertical member pivotally attached to the rear portion of the vehicle for pivoting forwardly and rearwardly, and an arm connected to the upper end of the vertical member and extending forwardly for supporting a load attachment such as a fork mounted on an upright. The vertical member and forwardly extending arm are operated by power means consisting of hydraulic cylinders, and a compensating means is included in the mechanism which adjusts the power means for the arm to cause the arm and the load attachment to move on a horizontal plane as the arm moves forwardly and rearwardly with the load. The compensating mechanism may include an adjustable hydraulic linkage for operating a valve to control the fluid to the hydraulic cylinder operating the arm for raising and lowering the load.

3,834,570

NURSING UNIT WITH IMPROVED PLASTIC LINER

Arthur C. Barr, 111 King St., Madison, Wis. 53703

Continuation-in-part of Ser. No. 206,965, Dec. 10, 1971, abandoned, which is a division of Ser. No. 68,368, Aug. 31, 1970, Pat. No. 3,645,414, which is a continuation-in-part of Ser. No. 862,840, Oct. 1, 1969, Pat. No. 3,545,637, which is a continuation-in-part of Ser. No. 744,537, July 12, 1968, Pat. No. 3,471,050. This application Feb. 7, 1973, Ser. No. 330,397
Int. Cl. A61j 9/04
U.S. Cl. 215—11 E 12 Claims



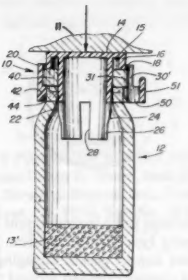
An impervious baby bottle is provided with a plastic liner, a nursing nipple, and a retaining cap. The plastic liner has longitudinal ribs on its exterior surface which extend over the lip of the bottle. The ribs provide venting spaces between the lip and the liner to vent the area between the bottle and liner to atmosphere so the liner collapses as liquid is dispensed therefrom. Several embodiments of the plastic liner are shown.

3,834,571

CONTAINER CLOSURE FOR LYOPHILIZED PRODUCTS

Ralph A. Bartell, Parsippany, N.J., assignor to Warner-Lambert Company, Morris Plains, N.J.

Filed Nov. 20, 1972, Ser. No. 308,096
Int. Cl. B65d 41/46, 51/16
U.S. Cl. 215—256 6 Claims



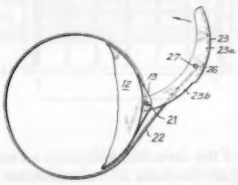
The specific disclosure provides an integrally formed closure for a lyophilized product container having a neck, an upwardly facing opening in the neck and an external radial bead on the neck. The closure comprises a downwardly extending stopper portion having port means for venting the container during a lyophilization process, and means for seating the closure in a first position in the neck during the lyophilization process with the port means being positioned at least in part above the opening. The closure also includes a downwardly extending tear away skirt portion having means for engaging the bead when the closure is seated in a second position in the neck with the port means positioned below the opening to prevent venting of the container.

3,834,572

CLOSURE CAP FOR CONTAINER

Murray L. Eskenazi, 8 Judith Ct., East Rockaway, N.Y. 11518

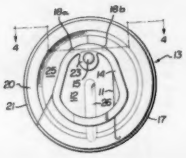
Filed Oct. 20, 1972, Ser. No. 299,496
Int. Cl. B65d 45/34
U.S. Cl. 215—272 8 Claims



A cap suitable for closure and reclosure of a container, especially when the container is pressurized, consists of a top and a side wall which is essentially cylindrical and is flexible. The cap is provided with a clamp and flexible band so pivoted that moving the handle toward the container cap draws a flexible band tightly around the periphery of the cylindrical wall compressing it against the container and effecting a tight seal. The cap may be grooved or have blind holes around the inner

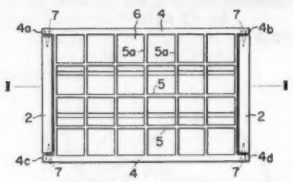
surface of the cylindrical wall in order to increase the flexibility of the side wall and to provide what are in effect suction cups.

3,834,573
METAL CLOSURE
Charles W. Amos, Waterville, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed July 17, 1972, Ser. No. 272,679
Int. Cl. B65d *43/02*
U.S. Cl. 215—255 **2 Claims**



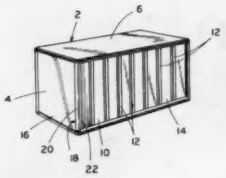
The disclosure relates to an improvement in construction of convenience opening type bottle closures. The closure comprises an inner liner cap or gasket engaging the bottle finish and an outer metal closure crimped around the bottle finish or rim. In the top of the outer cap there is a spaced pair of embossed projections which are located to place the pull ring member in tension, that is, to load it in a taut condition and prevent tear strip fracture, accidentally, while the package is in transit or handling prior to opening by the user.

3,834,574
CASING ADAPTED TO ACCOMMODATE AND TRANSPORT BOTTLES
Ichiro Nudeshima, Iida, and Daisaku Nudeshima, Fujisawa, both of Japan, assignors to Mitsubishi Kasei Kogyo Kabushiki Kaisha, a/k/a Mitsubishi Chemical Industries Limited, Tokyo-To, Japan
Filed Aug. 16, 1973, Ser. No. 388,751
Claims priority, application Japan, Aug. 21, 1972, 47-96784
Int. Cl. B65d *15/24*
U.S. Cl. 217—19 **6 Claims**



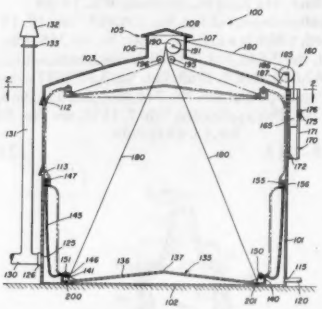
The casing of this invention comprises a combination of an outer member of wood and an inner member of a synthetic resin. The outer member comprises at least one bottom plate and upright transverse side boards fastened to the opposite ends of the bottom plate or plates, and the inner member comprises a pair of longitudinal side plates and a plurality of longitudinal and transverse partition plates intersecting each other at right angles to define substantially square openings for accomodating the bottles. The longitudinal side plates and the longitudinal and transverse partition plates of the inner member are formed as an integral structure, and the inner member is then nested in the outer member between its transverse side boards.

3,834,575
CONTAINER FRONT END CONSTRUCTION
George W. Carr, Cincinnati, Ohio, assignor to Pullman Incorporated, Chicago, Ill.
Filed May 10, 1973, Ser. No. 359,050
Int. Cl. B62d *33/00*
U.S. Cl. 220—1.5 **14 Claims**



A container construction such as a truck body for a vehicle or the like comprising a front wall and a pair of side walls connected by a pair of vertically extending front corner structures, each corner structure including an upright front corner post connecting with an end of the front wall and an upright side corner post connecting with the front corner post and the forward end of a respective side wall. The vertically extending connecting structure between the corner post and side post includes dovetailing front and side corner post portions and laterally spaced fastening means on the dovetailing front and side post portions or laterally spaced front and side post overlapping portions on the dovetailing front and side post portions that allow relative vertical sliding movement between the front and side walls for assembly of the container.

3,834,576
FLUID STORAGE CONTAINER
Milton W. Heisterberg, Flossmoor, Ill., assignor to General American Transportation Corporation, Chicago, Ill.
Filed Feb. 16, 1972, Ser. No. 226,897
Int. Cl. B65d *87/18*
U.S. Cl. 220—26 S **13 Claims**

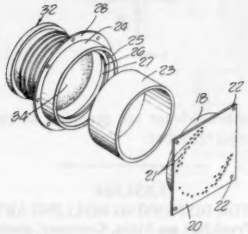


A fluid storage container is provided including a cylindrical shell, a piston positioned within the cylindrical shell and vertically movable with respect thereto, a seal positioned between the periphery of the piston and the cylindrical shell in sealing engagement with the piston and the cylindrical shell to provide a fluid-tight storage area within a portion of the cylindrical shell, a fluid inlet in communication with the storage area for admitting fluid thereinto, and a counterweight mechanism connected to the piston for substantially counterbalancing the weight of the piston and for maintaining the piston centrally positioned within the cylindrical shell during vertical movement of the piston therewithin. The counterweight mechanism is connected to the piston through a focal point located vertically above and in vertical alignment with the center of the piston.

3,834,577
PORTING APPARATUS FOR A REFRIGERATED STORAGE CHAMBER

Robert Tempero, San Jose, Calif., assignor to Transfresh Corporation, Salinas, Calif.

Filed May 30, 1972, No. 257,882
Int. Cl. B65d *41/00*
U.S. Cl. 220—42 B **8 Claims**



A pair of openings of appropriate size are formed in the refrigerated chamber, one at each end thereof. The inner opening end includes a cylindrical band covered by a perforated plate. An elongated hollow cylinder of poor heat conducting material is received within the opening, its inner end being seated within the cylindrical band. The other cylinder end is sealed to an annular fitting that is secured to the outer chamber wall. A resilient expandable plug is removably received within the annular fitting and hollow cylinder to hermetically seal the passageway.

3,834,578
FLOWED-IN POLYURETHANE GASKETS FOR PAIL AND DRUM COVERS

David B. Smith, Watertown, and Joel A. Gribens, Framingham, both of Mass., assignors to W. R. Grace & Co., Cambridge, Mass.

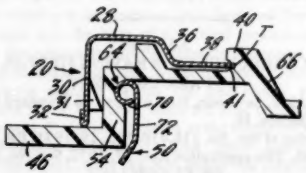
No Drawing. Filed June 22, 1972, Ser. No. 265,148
Int. Cl. B65d *53/06;* **C08g** *22/48, 41/04*
U.S. Cl. 220—46 R **1 Claim**

Superior sealing performance can be imparted to pail and drum covers by equipping them with flowed-in gaskets made from a composition comprising a nitrile rubber, a polyurethane prepolymer and a carbon dioxide blocked polyamine curing agent.

3,834,579
CONTAINER HAVING A METAL OVERCAP-THERMOPLASTIC LID CLOSURE ASSEMBLY

Leonard Thomas LaCroce, Paramus, N.J., assignor to American Can Company, Greenwich, Conn.

Filed Mar. 27, 1973, Ser. No. 345,262
Int. Cl. B65d *43/10*
U.S. Cl. 220—60 R **15 Claims**

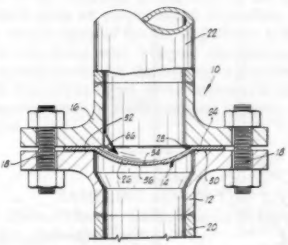


A container is provided having a no-tool, easy-open thermoplastic lid-metal overcap closure assembly thereon. The lid and overcap are secured together to form the assembly by the engagement of overcap tongues in an upwardly-protruding annular retaining bead in the lid in one embodiment wherein the overcap is a retaining ring, and by the engagement of a radially inwardly-extending curl at the base of the overcap skirt with a lower portion of the lid skirt in another embodiment wherein the overcap has a substantially full central panel. The assembly lid and overcap skirts are spaced radially from each other to enable the lid skirt to bow outwardly as it passes over the bead on the container throat when the assembly is being placed on the container. The assembly is removably secured to the container by seating and abuttingly engaging an undercut adjacent the junction of the lid rim and skirt with the container throat bead and by crimping the lower portion of the overcap skirt against a corresponding portion of the lid skirt.

3,834,580
SAFETY PRESSURE RELIEF DEVICE

Gary Joe Ludwig, and Loren E. Wood, both of Tulsa, Okla., assignors to Black, Sivalls & Bryson, Inc., Tulsa, Okla.

Filed Sept. 25, 1972, Ser. No. 291,951
Int. Cl. F16k *17/16*
U.S. Cl. 220—89 A **9 Claims**



The present invention relates to an improved safety pressure relief device of the type having a concave-convex reverse buckling rupture disk supported between inlet and outlet supporting members. By the present invention the rupture disk includes scores on a surface of the concave-convex portion thereof creating lines of weakness therein, and an area of relative weakness is positioned at the center of the concave-convex portion so that upon failure the disk reverses itself from the center of the concave-convex portion outwardly towards the periphery thereof and then tears along the lines of weakness.

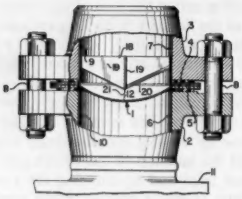
3,834,581
REVERSE BUCKLING DISC ARRANGEMENT FOR DIRECT MOUNTING

Robert L. Solter, Blue Springs, and Franklin A. Hansen, Raytown, both of Mo., assignors to Continental Disc Corporation, Kansas City, Mo.

Filed Oct. 2, 1972, Ser. No. 294,260
Int. Cl. F16k *17/40*
U.S. Cl. 220—89 A **11 Claims**

A safety pressure relief device of the reverse buckling type for mounting directly between ASA type flanges includes a pre-seated bulged disc arrangement secured to or trapped by a centering ring unit containing a knife-blade, the centering ring

unit telescoping into a flange bore and operably positioning both the disc arrangement and the knife-blade between and



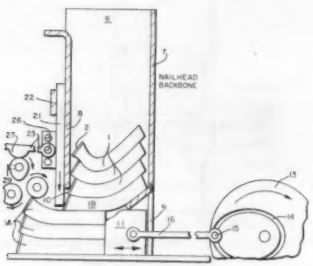
within the flanges, eliminating the need for disc base and disc holddown flanges.

3,834,582

MOVING GATE FOR HOPPER DISCHARGING FLAT ARTICLES OF IRREGULAR THICKNESS

Peter Aspinwall, Carlisle, Mass., assignor to Comstock & Wescott, Inc., Cambridge, Mass.

Filed July 11, 1973, Ser. No. 378,374
Int. Cl. B65g 59/06
U.S. Cl. 221—248 6 Claims



In bookbinding apparatus a hopper accumulates a stack of books received from a binder with extra thick spines and discharges them to a book trimmer, the hopper having at its lower end an entrance through which a pusher drives a selected lower group of books out an exit. As a group of books exits a vertically reciprocating gate at the exit moves downwards from an upper position accommodating the extra thickness of the book spines to a lower position which allows only the selected group of books to pass out through the exit.

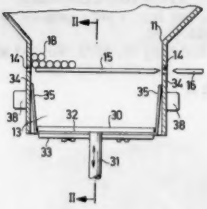
3,834,583

APPARATUS FOR SORTING ROD-LIKE ARTICLES

Helmut Brodbeck, Trossingen, Germany, assignor to Efka-Werke Fritz Kiehn GmbH, Trossingen/Wurtt, Germany

Filed Mar. 15, 1972, Ser. No. 234,710
Claims priority, application Germany, Mar. 19, 1971, 2113384; Apr. 1, 1971, 2115871
Int. Cl. B65h 3/32
U.S. Cl. 221—251 17 Claims

Apparatus for apportioning rod-like articles is provided, comprising a hopper adapted to be divided into an upper receiving reservoir and a lower measuring chamber of defined dimensions. Slide means are insertable within the hopper in a horizontal plane, perpendicular to the longitudinal axis of the rod, so as to separate the reservoir from the chamber. The slide means are cyclically operated to permit a measured amount of rods to move from the receiving chamber to the



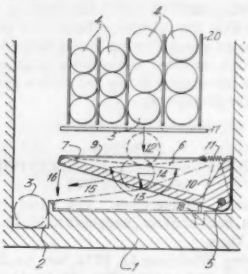
measuring chamber. Means are provided to eject the rods from the measuring chamber.

3,834,584

DEVICE FOR DISPENSING ROLLING ARTICLES

Walter Stute, Frankfurt am Main, Germany, assignor to Perod S.A., Maisons-Alfort, France

Filed Sept. 1, 1971, Ser. No. 176,892
Claims priority, application Germany, Nov. 4, 1970, 2054227
Int. Cl. B65g 11/00
U.S. Cl. 221—312 13 Claims



A device in a vending machine for transferring rollable articles, such as bottles, from a storage location in the vending machine to a delivery position therein is disclosed.

The device includes a strip of resilient or resiliently supported material positioned below the storage location to receive articles as they are individually discharged therefrom. The surface of the strip which receives the discharged articles is either permanently, or periodically, inclined towards the delivery position to provide a sloping surface down which the discharged bottles roll and because of the resilient nature of the material or of the suspension thereof, the weight of the discharged bottle causes a depression in the surface of the strip which tends to restrain the bottle from rolling askew.

The depression travels along the surface with the rolling bottle and constrains the bottle to follow a substantially linear path towards the delivery position in the vending machine.

3,834,585

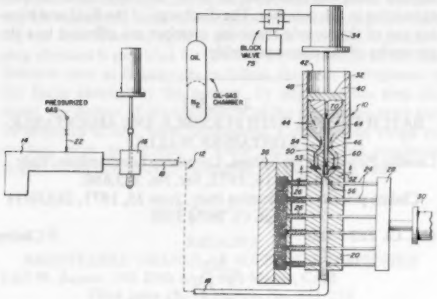
PLASTICS ACCUMULATOR HAVING FIRST-IN, FIRST-OUT ARRANGEMENT

James E. Aker, Seymour, Ind., assignor to Standard Oil Company, Chicago, Ill.

Division of Ser. No. 116,410, Feb. 18, 1971, Pat. No. 3,707,248. This application Apr. 17, 1972, Ser. No. 244,976
Int. Cl. G07f 11/02
U.S. Cl. 222—1 6 Claims

Heat degradation of plastics is minimized using an accumulator in which fresh plastic is introduced into the accumulator

at a point remote from the point where previously stored plastic is withdrawn. Consequently, plastic which was last introduced into this accumulator is withdrawn before freshly introduced plastic. A control system for regulating the flow of plastic is also disclosed.



3,834,586

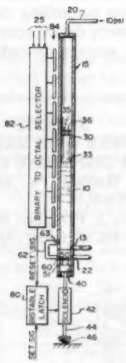
FLUID MEASURING AND DISPENSING SYSTEM

Jack L. Wilhelmson, Fenton, Mo., assignor to Sherwood Medical Industries, Inc., St. Louis, Mo.

Filed June 2, 1971, Ser. No. 149,299

Int. Cl. B67d *5/54*

U.S. Cl. 222—47 **14 Claims**



Liquid which is to be measured and dispensed flows through an inlet port into the bore of a vertical measurement tube, forcing a free piston upward. A plurality of sensors are vertically located along the tube. When the sensor enabled by a liquid volume selector detects the free piston, a solenoid driven valve piston moves to block the inlet port and opens a discharge port. Purge gas, entering at the top of the tube bore, is now effective to force the free piston downward and dispense the liquid. After the free piston has forced all liquid out of the tube, a gas passageway couples the purge gas in the tube bore to the discharge port, simultaneously purging the measurement tube and the discharge port.

3,834,587

MEANS FOR AUTOMATIC CONTROL OF BATCHING WHEN CASTING FROM A HEAT-RETAINING OF CASTING FURNACE OR LADLE (CRUCIBLE)

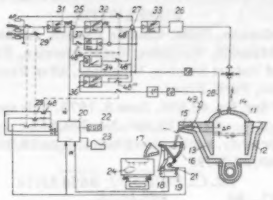
Fredrikson Bengt, and Bergman Kjell, both of Vasteras, Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Nov. 13, 1972, Ser. No. 305,684

Claims priority, application Sweden, Dec. 18, 1971, 14738/71

Int. Cl. B22d *37/00*

U.S. Cl. 222—56 **4 Claims**



For the automatic control of batching when casting from a heat-retaining furnace or ladle, an arrangement is provided for tapping the ladle in batches into a batching ladle. An arrangement is provided for weighing the batching ladle and the output signal of the weighing arrangement is fed to a deriving device which gives an output signal dependent on the melt flow. The output signal of the deriving device is fed to a comparison device along with a signal representing a desired value. A control device for the tapping of the furnace is combined with the output signal of the comparison device to terminate tapping when a predetermined quantity of melt has been tapped.

3,834,588

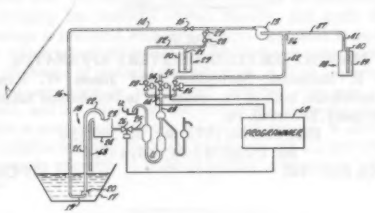
SAMPLING APPARATUS

Robert H. Jones, Fullerton, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed July 18, 1973, Ser. No. 380,351

Int. Cl. B67d *5/08*

U.S. Cl. 222—61 **15 Claims**



Apparatus for selectively delivering measured quantities of liquid from a flowing channel to a storage vessel to produce a composite sample. A container is supplied with a continuous flow of liquid from the channel at a constant level. A dispensing tube has an inlet connected to receive air during vacuum, vent and pressure portions of an operation cycle and an outlet connected to deliver a sample to a recipient system. An air pump has an output connected to supply air under pressure through one conduit to the air lift tube which supplies the liquid from the channel and through a branch conduit to the inlet of the dispensing tube. A transfer vessel operatively connected between the inlet and outlet of the dispensing tube receives liquid from the container during the vacuum portion of the operation cycle at a level above that of the liquid

remaining in the dispensing tube from a previous operation cycle. A vacuum regulator unit is operatively connected to the air pump inlet to regulate the vacuum to the dispensing tube and a pressure regulator is operatively connected to the branch conduit to regulate the pressure to the dispensing tubes. Valves responsive to a programmer operate to selectively control the flow of air from the air pump to the dispensing tube during an operation cycle.

3,834,589

PRESSURE-RESPONSIVE SAFETY DEVICE FOR AEROSOL DISPENSER AND CONTAINERS EQUIPPED THEREWITH

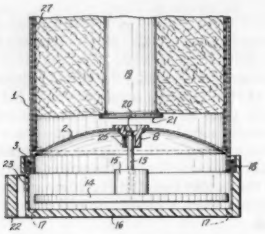
Bruno P. Morane, Paris; Charles Paoletti, Aulnay Sous Bois; Manlio Maurelli, Vaujours; Louis Merrien, Fontenay Sous Bois, and Robert Sathicq, Villepinte, all of France, assignors to L'Oreal, Paris, France

Division of Ser. No. 43,696, June 5, 1970. This application July 11, 1972, Ser. No. 270,643

Claims priority, application France, June 10, 1969, 69.19182; Sept. 1, 1969, 69.29795

Int. Cl. B67d *5/32;* **B65d** *83/14*

U.S. Cl. 222—80 **4 Claims**



Container has concave bottom, and cartridge of pressurizing gas within it near the bottom. A resilient safety device is seated in the bottom and defines a central hole. A pin is slidably positioned in said hole in alignment with the cartridge so as to rupture said cartridge when depressed. The safety device bulges outwardly when there is excessive pressure inside the container, thus enlarging the hole so that gas can escape around the pin.

3,834,590

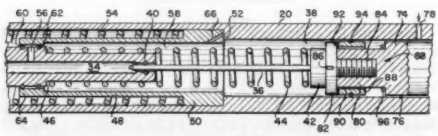
MICROLITER FLUID DELIVERY APPARATUS

John E. Robinson, Springfield, and James W. Kenney, Philadelphia, both of Pa., assignors to Drummond Scientific Company, Broomall, Pa.

Filed Oct. 24, 1972, Ser. No. 300,154

Int. Cl. B67d *1/08;* **G01n** *1/14*

U.S. Cl. 222—148 **29 Claims**



This apparatus includes a cylindrical barrel having positioned therein a cylinder in which a piston is slideable longitudinally for drawing fluid into a sample-receiving member connected to the apparatus. A piston assembly engaged with one end of the piston is operable within the barrel to actuate the piston and to simultaneously compress the air within the barrel on the down stroke of the piston assembly. Movement of the first piston through the cylinder discharges the majority of the fluid from the sample-receiving member. Means are provided for sequentially admitting the compressed air to the sample receiving member to blow out any fluid droplets remaining in the member. The discharge of the fluid and blowing out of the sample-receiving member are effected in a single stroke of the piston assembly.

3,834,591

BATCH FEEDER WITH FLEXIBLE AND ADJUSTABLE CONTAINER WALLS

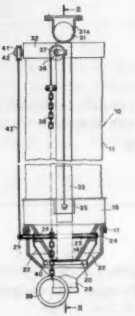
Camillo Pirovano, Via Spluga, Cernusco, Lombardone, Italy

Filed June 16, 1972, Ser. No. 263,690

Claims priority, application Italy, June 25, 1971, 26320/71

Int. Cl. B67d *3/00*

U.S. Cl. 222—185 **5 Claims**



Batch feeder, particularly for distributing fodder in animal breeding places, comprising a container with a tubular wall, which is deformable axially and resiliently, a discharge mouth for the product to be delivered, a discharge valve mounted in said mouth and means controlling the axial deformation of said tubular wall, whereby the capacity of the batch feeder can be adjusted and any seepage through the discharge valve is avoided.

3,834,592

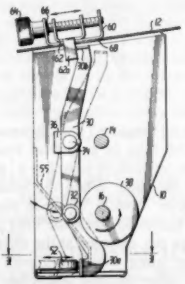
TONER REPLENISHER WITH MANUAL ADJUSTMENT OF DISPENSING RATE

Gabriel B. Cherian, Hatfield, Pa., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Nov. 3, 1972, Ser. No. 303,477

Int. Cl. G03g *15/08*

U.S. Cl. 222—277 **6 Claims**



A plurality of finger-like dispensing arms are mounted for pivotal movement back and forth along a path over a slot in

the bottom of a toner dispenser hopper. The degree of pivotal movement controls the amount of toner dispensed. A linkage including a cam follower arm is provided for driving the dispensing arms in one direction in response to rotation of a continuously rotating cam. Springs provide the force for driving the dispensing arms in the opposite direction and for holding the cam follower against the cam. A manually adjustable stop element is provided for limiting the movement of the cam follower arm as it attempts to follow the cam in response to the force exerted by the springs. By adjusting the stop element, the degree of pivotal motion of the dispensing arms may be adjusted to any value throughout a continuous range extending from no motion to some predetermined maximum degree of motion, thereby adjusting the dispensing rate.

3,834,593

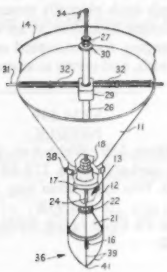
ADJUSTABLE GRANULAR MATERIAL DISPENSER

Earl W. James, 148 29th Ave., San Mateo, Calif.

Filed June 18, 1973, Ser. No. 371,275

Int. Cl. G01f *11/40*

U.S. Cl. 222—440 **4 Claims**



For dispensing granular material (such as vitamin conditioner for animals) a conical hopper having a discharge chute at the bottom is provided with a metering and dispensing valve structure which is adjustable for varying the quantity of material metered. A threaded rod is supported by a fitting at the center of the top of the hopper and is movable relative to the hopper between three positions: (a) filling position; (b) closed position; and (c) dispensing position. The lower end of the rod carries a bottom valve member which has a maximum diameter to close off the chute in filling or closed positions. Spaced upward of the bottom valve member and also on the threaded rod is top valve member which closes off the chute in closed and dispensing positions. The adjustable distance between the members determines the volume dispensed.

3,834,594

DEVICE FOR THE VENTING OF JERRY CANS

Wofram Schiemann, Eugen-Nagele-Strasse 17, 714 Ludwigsburg, Germany

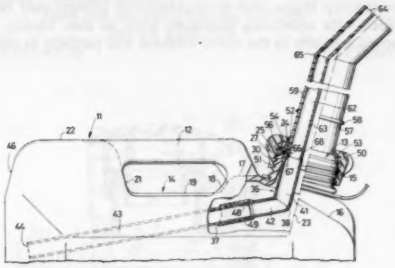
Filed Aug. 15, 1972, Ser. No. 280,817

Claims priority, application Germany, Oct. 26, 1971, 2153155

Int. Cl. B67d *3/00*

U.S. Cl. 222—464 **13 Claims**

A molded plastic jerry can has a ring insert fitted at its spout. The insert has a nipple starting at about the inner perimeter of the spout and extending first parallel to the axis of the spout and then bending towards the upper part of the rear wall of the can. A long tube is press fitted on the end of the nipple with its free end terminating close to the rear wall. The spout can have a discharge pipe extending from it. The



discharge pipe has a vent tube which runs from the top of the nipple to the discharge end of the pipe.

3,834,595

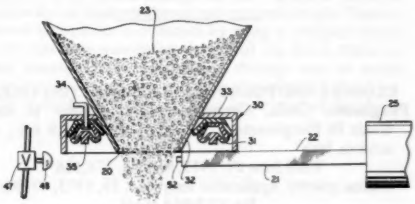
STORAGE BIN WITH FLOW CONTROL SEALING APPARATUS

James Donald Brock, and Erbie Gail Mize, both of Chattanooga, Tenn., assignors to Astec Industries, Inc., Chattanooga, Tenn.

Filed Feb. 26, 1973, Ser. No. 335,700

Int. Cl. B67d *5/34*

U.S. Cl. 222—504 **15 Claims**



Storage bin for receiving and dispensing a material such as asphalt mix. The storage bin has openings for receiving and discharging the material stored therein, and each of the openings is provided with flow control apparatus including a gate which selectively opens and closes the opening to control the discharge of material therethrough. A fluid impermeable sealing condition is maintained between the gate, when closed, and the interior of the storage bin by means of a seal which is positioned between the bin and the gate in surrounding relation with the discharge opening in the bin and which is selectively operable to undergo sealing engagement with the gate.

3,834,596

BOTTLE-CLOSURE STRUCTURE

Thomas J. Brady, Madison; Richard L. Lawrence, Short Hills; Carmen J. Gonnella, Succasunna, and Gottfried Metzler, III, Brookside, all of N.J., assignors to The Mennen Company, Morris Township, N.J.

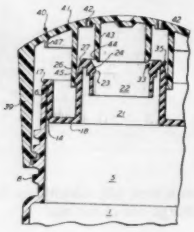
Filed July 11, 1973, Ser. No. 378,230

Int. Cl. B67d *3/00*

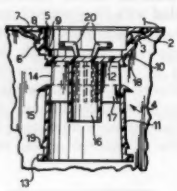
U.S. Cl. 222—520 **9 Claims**

A closure structure for a bottle from which there extends a neck carrying external threading. A conduit member is supported within the neck in coaxial and fluid-tight relation thereto, and communicates with the interior of the bottle. A cover element is assembled in coaxial relation to the neck, having internal threading engaged with the external neck

threading thereby to cause rotations of the cover element to be accompanied by axial movements thereof toward and away from the bottle; the cover element may be generally of inverted-cup shape, and in its transverse portion may be provided with aperturing displaced from its axis. Means, comprised partially in the cover element and partially in the conduit member, form a valve closed and opened by the above-mentioned movements of the cover element; when closed the valve blocks, but when open it permits, fluid flow from within the conduit member to said aperturing. And appropriate means are interposed, and block fluid flow, between the outward side of the valve and the engaged threadings.

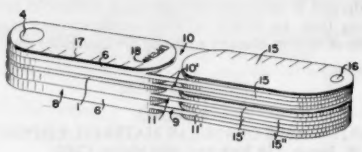


3,834,597
CLOSURE AND POURING DEVICE FOR CONTAINERS
Piergiacomo Guala, Alessandria, Italy, assignor to Angelo Guala Di Piergiacomo E. Roberto Guala & C.S.A.S., Alessandria, Italy
Filed June 27, 1973, Ser. No. 374,166
Claims priority, application Italy, Jan. 19, 1973, 67091/73
Int. Cl. B65d *25/44*
U.S. Cl. 222—525 **3 Claims**



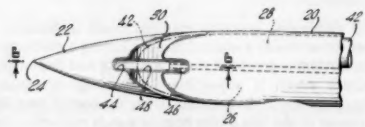
A closure device for cans or like containers comprising integrally formed first and second parts with a frangible bridge connecting part forming a guarantee seal. The first part is snap engageable into an opening in the wall of a can so that it cannot be removed therefrom without it being immediately apparent, such as by the breakage of a specially weakened part. The second part is held in the closed position by the frangible connecting part which must be broken in order to effect initial opening of the closure device to extend the said second part to a pouring position. Reclosure, but not resealing, can be effected by retracting the second part back to its initial position until cooperating abutments on the first and second parts engage.

3,834,598
FOLDABLE HANGER
Yutaka Matsumoto, No. 21-1, 1-chome, Higashisugano, Ichikawa, Japan
Filed Oct. 13, 1972, Ser. No. 297,485
Claims priority, application Japan, May 1, 1972, 47-51316
Int. Cl. A47j *51/10*
U.S. Cl. 223—89 **3 Claims**



A foldable portable hanger for hanging clothes or laundered garments comprises a suspending rod, a plurality of shoulder rods each pivotally mounted on said suspending rod and becoming immobile at a substantially horizontal position, a plurality of leg rods each pivotally mounted on said suspending rod and becoming immobile at an oblique position, and one to several hanging rods mounted on both said shoulder rods and said leg rods, and serves to suspend clothes and wash.

3,834,599
NEEDLE
Nicholas George Herr, 2391 Webb Ave., Bronx, N.Y. 10468
Continuation-in-part of Ser. No. 277,944, Aug. 4, 1972, Pat. No. 3,754,693. This application Aug. 23, 1973, Ser. No. 390,973
Int. Cl. F02d *11/10*; D05b *85/00*
U.S. Cl. 223—102 **10 Claims**

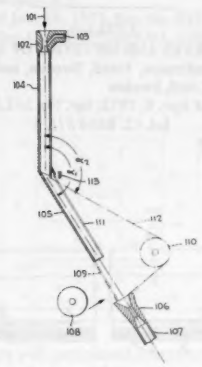


A needle which includes an elongated body formed with a front pointed tip for piercing through the work as well as with a pair of bores rearwardly of the tip for receiving the filamentary material. The body is formed at the front ends of these bores with a transverse notch which forms an open eye so that the filamentary material can extend forwardly along the interior of one of the bores, across the open eye, and then rearwardly along the interior of the other bores enabling the needle in this way to pierce through the work while maintaining the filamentary material out of engagement with the work.

3,834,600
APPARATUS FOR THE TRANSPORT OF YARNS
Claude Benchemoul, Roanne, France, assignor to Rhone-Poulenc-Textile, Lyon Cedex, France
Filed Sept. 7, 1972, Ser. No. 287,063
Int. Cl. B65h *17/32*
U.S. Cl. 226—97 **6 Claims**

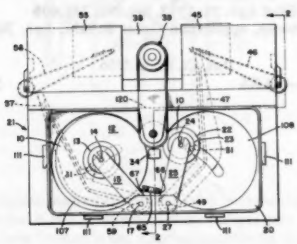
Apparatus for the high speed transport of yarns using a fluid comprising a first guide passage, a second guide passage, the outlet of the first guide passage communicating with the inlet

of the second guide passage, and a longitudinal slot in the second guide passage extending upstream from the outlet of



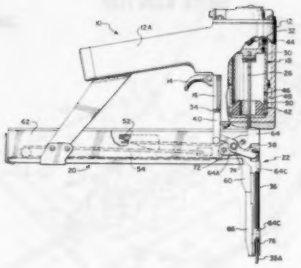
the second guide passage along the length of the second guide passage.

3,834,601
TAPE RECORDING SYSTEM
Jerry O. Kelley, Grass Valley, Calif., assignor to Arvin Industries, Inc., Columbus, Ind.
Filed July 11, 1972, Ser. No. 270,586
Int. Cl. B65h *17/20*
U.S. Cl. 226—191 **13 Claims**



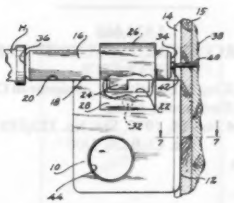
A tape recording system has a capstan with a thin low friction metallic ring forming a tape engaging surface. A compressible ring is mounted behind the metallic ring. The entire capstan penetrates into the cassette to engage the tape, and the surface of the capstan metallic ring is bounded by flanges to guide and hold the tape onto the ring. The tape take-up within the cassette presses the outermost layer of tape against the tape engaging surface of the metal ring, forming a friction drive for the take-up. A link system interconnects the supply and the take-up to maintain the outermost layer of the supply a slight distance from the capstan when the take-up is against the capstan. When the take-up is withdrawn from the capstan, the tape slips on the low friction surface of the capstan, thus avoiding pile-up and breakage of the tape. A center point and socket system supports the capstan for accurate, low friction rotation about its axis.

3,834,602
FASTENER DRIVING TOOL
Allen R. Obergfell, Park Ridge, Ill., assignor to Fastener Corporation, Franklin Park, Ill.
Filed Jan. 26, 1973, Ser. No. 327,105
Int. Cl. B25c *1/04*
U.S. Cl. 227—120 **31 Claims**



A stapler or nailer for applying such fasteners to inaccessible workpiece locations includes a "long nose" or extended nosepiece structure forming a drive track. Although the drive track is greatly elongated compared to a conventional tool, a fastener driving blade and a coupled piston-cylinder motor do not require corresponding longer operating strokes because the fastener is advanced through the drive track in steps on successive driver blade strokes of conventional length. This incremental movement is obtained by using a stepped driver blade to move, on successive strokes of the driver blade, a fastener supplied from a magazine through one or more fastener storage or retaining stations spaced along the drive track to a discharge opening at the lower end of the drive track.

3,834,603
NAIL SETTING TOOL FOR APPLYING GROOVED PANELING
Albert A. Yocco, 2617 Jean Ave., Racine, Wis.
Filed Apr. 12, 1973, Ser. No. 350,320
Int. Cl. B25c *1/02*
U.S. Cl. 227—156 **5 Claims**



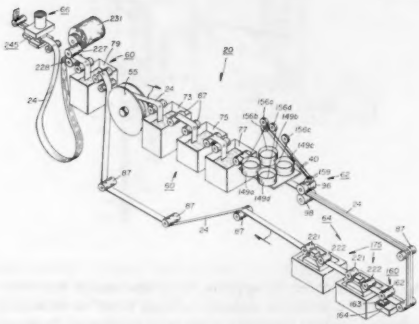
A nail-setting tool for mounting grooved paneling, having a body portion that is held by hand and inserted in the groove. A plunger that engages the head of the nail is slidable on the body portion, and a hammer is employed to engage the plunger and drive the nail so that the head thereof is flush with the bottom surface of the groove.

3,834,604

APPARATUS FOR SOLID-PHASE BONDING MATING MEMBERS THROUGH AN INTERPOSED PRE-SHAPED COMPLIANT MEDIUM

Richard L. Fendley; Gerhard E. Hoenig; George Poehlmann, and John M. Prendergast, Jr., all of Indianapolis, Ind., assignors to Western Electric Company, Incorporated, New York, N.Y.

Filed Oct. 3, 1972, Ser. No. 294,755
Int. Cl. B23k *1/20*
U.S. Cl. 228—5 **28 Claims**



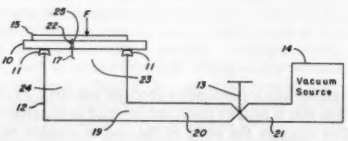
Apparatus for producing consistently uniform and high strength solid-phase (preferably thermocompression) bonds between two mating members and, in particular, between multiple micro-size lead-frame-fabricated electrical ribbon leads and thin film terminals formed on glass or ceramic circuit substrates, for example, through the utilization of at least one, but preferably two or more, interposed and specially contoured compliant contacts per lead. The preshaping of the compliant contacts into essentially triangular cross-section (preferably accomplished by initially roll bonding contact-forming precious metal wire(s) to lead-frame forming strip stock), has been found to be very beneficial and significant in establishing a sufficient degree of inherent compliancy to minimize, if not eliminate, force-induced circuit substrate failures due to fracture or glass cavitation, and to provide sufficient plastic deformation to insure the attainment of reliable and consistent mechanical cleaning, metal-to-metal adhesion and bond definition at the bond interfaces. The utilization of two or more pre-shaped compliant contacts per bond area, so as to produce redundant bonds, further insures against total bond and/or substrate failures due to the presence of random micro-imperfections in or blemishes on the mating bond surfaces.

3,834,605

PRINTED CIRCUIT CARD COMPONENT REMOVAL APPARATUS

Harry S. Coffin, King of Prussia, Pa., assignor to Control Valve Corporation, Minneapolis, Minn.

Filed Jan. 15, 1973, Ser. No. 323,558
Int. Cl. B23k *1/00*
U.S. Cl. 228—20 **7 Claims**



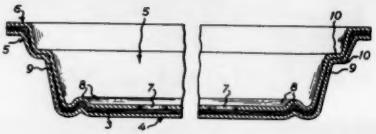
Apparatus for removing a component whose leads pass through and are soldered into holes in a printed circuit board. The solder gripping the leads is melted, and the apparatus then applies a vacuum to the component side of the board to remove the component.

3,834,606

PACKAGING TRAYS AND METHODS OF MAKING THEM

Sven Ingemar Andersson, Ystad, Sweden, assignor to Torsten Jeppsson AB, Lund, Sweden

Filed Apr. 6, 1972, Ser. No. 241,574
Int. Cl. B65d *81/26*
U.S. Cl. 229—2.5 **1 Claim**



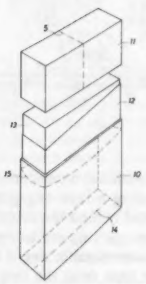
A packaging tray provided with a bottom, side walls, and an outwardly directed flange surrounding the periphery of the side walls of the tray, consists of outer and inner layers of a moldable and stretchable synthetic plastic material, and intermediate layers of liquid-absorbing material with no or but insignificant stretchability. At the molding of the tray, the side walls thereof are formed by stretching of the plastic material and in a softening operation, an adhesive bond is realized between the outer and inner layers of the stretched tray side walls which thus present an at least partially or substantially completely ruptured intermediate layer.

3,834,607

RIGID PAPERBOARD CONTAINER

Wilfried Edgard Muylle, Schoten, Belgium, assignor to AGFA-Gevaert N. V., Mortsel, Belgium

Filed Apr. 28, 1972, Ser. No. 248,408
Claims priority, application Great Britain, Apr. 30, 1971, 12439/71
Int. Cl. B65d *5/56*
U.S. Cl. 229—14 BA **5 Claims**



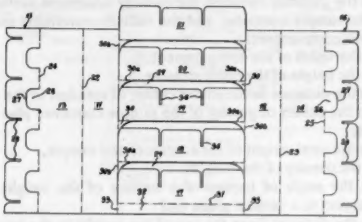
A paperboard container having an opening is wrapped in a shrink-wrapping, and the wrapping is shrunk over the container. The portion of the wrapping extending over the opening is displaced towards the innerside of the container and secured so as to leave the opening unobstructed. The wrapping of the container forms an integral part of the container.

3,834,608

COMPARTMENTED TRAY

Ernest W. Giebel, Monroe, Mich., assignor to Union Camp Corporation, Wayne, N.J.

Filed Jan. 29, 1973, Ser. No. 327,855
Int. Cl. B65d 5/20, 5/42, 5/48
U.S. Cl. 229—15 4 Claims



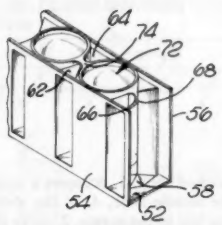
A four sided tray with partitioned compartments, which tray is formed from a single die cut folded blank and requires only a single flat sheet to be inserted into the center of the tray to complete the bottom of the tray.

3,834,609

CONTAINER ASSEMBLY HAVING COMPARTMENTS AND MEANS FOR STACKING CONTAINER BLANK

Wayne Congleton, Whittier, Calif., assignor to Dolco Packaging Corporation, Burbank, Calif.

Filed July 20, 1972, Ser. No. 273,558
Int. Cl. B65d 1/24, 75/02
U.S. Cl. 229—28 R 3 Claims



A container assembly formed of a member which when unassembled is in a generally planar configuration. A plurality of hinge lines formed in the member enables the member to be folded into a predetermined shape for dividing the member into a plurality of predetermined sections. Hollow indentations form structural components which interact when the member is folded along the hinge lines to provide a structure of predetermined shape, and enabling a plurality of the members to be stacked when unassembled.

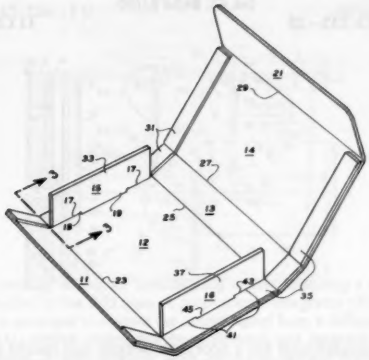
3,834,610

CONTAINER WITH FOLDED PANEL PORTIONS

Stephen L. Elfrid, 850 Jay Dr., Downers Grove, Ill. 60515

Filed Apr. 18, 1973, Ser. No. 352,277
Int. Cl. B65d 5/02, 5/22
U.S. Cl. 229—40 8 Claims

An erectible panel portion is erected and held in self-sustaining relationship to another panel portion in a container by means of a projection formed on one panel portion abutting a wall in the other panel portion adjacent a fold line. The projection is formed by an offset cut at the fold line. Also, a shipping container is disclosed having a plurality of panels in which at least two panels are planar and lie flat against each other with the container in an unassembled condition. One of the two panels is provided with a fold line for folding at least one portion of the panel away from the other panel to extend transversely thereof. The folded portion of the panel is supported in the transverse condition by means of a projection provided by an offset cut at the fold line to extend from the folded portion on the opposite side of the fold line and engage the other panel.

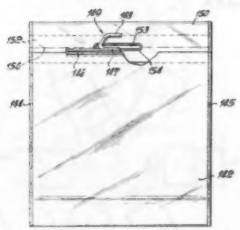


3,834,611

HANDLE-TYPE CARRYING BAG MADE OF PLASTICS MATERIAL SHEETING

August Schwarzkopf, Lengerich/Westphalia, Germany, assignor to Windmoller & Holscher, Lengerich, Westphalia, Germany

Division of Ser. No. 49,084, June 23, 1970, Pat. No. 3,693,867.
This application June 27, 1972, Ser. No. 266,564
Claims priority, application Germany, Oct. 31, 1969, 1954944; May 27, 1970, 2020549; Apr. 27, 1970, 2020548; May 22, 1970, 2025107
Int. Cl. B65d 33/02, 33/06
U.S. Cl. 229—54 R 11 Claims



Only one wall of the bag is provided with a heat-sealed carrying handle made of stiff synthetic thermoplastics. The other wall of the bag is provided with a lead-out slot on the level of the lower end of the handle and has a reversely foldable portion extending beyond said lead-out slot.

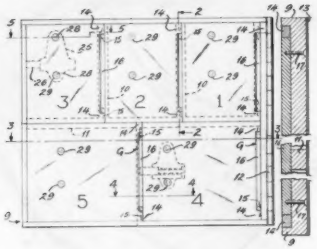
3,834,612
COMPARTMENT DOOR STRUCTURE

Willard H. Bixby, Steeleville, Ill., assignor to American Device Manufacturing Company, Steeleville, Ill.

Continuation-in-part of Ser. No. 873,031, Oct. 31, 1969, abandoned. This application Aug. 19, 1971, Ser. No. 173,034

Int. Cl. B65d *91/00*

U.S. Cl. 232—25 **11 Claims**



A compartment has a door with integral ears spaced apart and projecting from one edge of the door and substantially flush with the outer face of the door, there being a mounting bar extending between the ears and having an outer face flush with the door outer face; a hinge pin extending from each end of the mounting bar into the adjacent door ear; and elements, accessible only from the rear of the door, for securing the mounting bar to a frame closely surrounding the door and flush with its outer face. In a preferred form of the invention the mounting bar includes a flange which normally projects inwardly from the rear face of the door when the door is closed and is secured to the frame by screws or other elements accessible when the door is opened but concealed by the door when closed.

The invention contemplates the mounting of a plurality of doors, as described above, in a common frame which is hinged at one side to a cabinet or wall so as to swing on its hinge as a unit with all of the doors having their outer faces flush with the common frame.

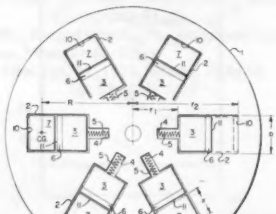
3,834,613
CENTRIFUGE ROTOR WITH SAMPLE HOLDING MEANS AND MEANS FOR BALANCING THE SAME

James J. Hankey, Canton, Mass., assignor to International Equipment Company, Needham Heights, Mass.

Continuation-in-part of Ser. No. 119,469, March 1, 1971. This application Oct. 5, 1972, Ser. No. 295,143

Int. Cl. B04b *9/14*

U.S. Cl. 233—23 A **2 Claims**



A self-balancing rotor having a plurality of compartments for accommodating a sample container and having a spring-loaded weight constrained to move only in the radial direction. The relationship among the weight, sample container and compartment is defined by the following equation.

$$r_1 = r_2 - [x + (RWlyxbh + l^2/2h) \tan \theta]$$

wherein

r_1 is the distance between the center of rotation of the rotor and the radially innermost surface of the compartment,

r_2 is the distance between the center of rotation of the rotor and the radially outermost surface of the compartment,

x is the distance between the radially innermost surface of the sample container and the radially outermost surface of a compartment,

b is the width of the compartment,

h is the height of the compartment,

R is the distance between the center of rotation of the rotor to the center of gravity of the sample container plus sample,

W is the total weight of the container and sample,

y is the density of the weight,

θ is the angle of incline of a surface of the weight with respect to a vertical plane and

l is the distance from the top of the weight to the intersection of the inclined surface, if any, and the radially outward surface of the weight. The angle, θ, ranges from 0 to $\tan^{-1}[r_2 - r_1 - x]$

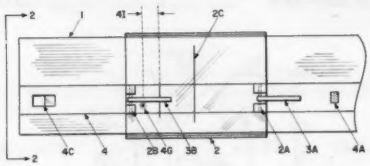
3,834,614
DECIMAL POINT INDICATOR FOR SLIDE RULE

Allen Noble, 14101 S. Woodland Rd., Shaker Heights, Ohio 44120

Continuation of Ser. No. 846,152, July 30, 1969, abandoned. This application Mar. 27, 1973, Ser. No. 345,363

Int. Cl. G06c *19/02*

U.S. Cl. 235—64.3 **2 Claims**



A numbered notched slide, 5, occupies a lengthwise bore, 4E, interior to the middle slide, 4, of the slide rule. Hook prods, 3A, 3B, attached to the cursor, 2, move this numbered notched slide. The addition of a transparent window, 4A, to observe numbers, spring, 6, and spring box, 4D, and openings in the middle slide, 4C, 4B, improve the device further. Proper operation of this improvement in the slide rule eliminates the need for the operator to carry the place of the decimal in his head while operating the slide rule.

3,834,615
METHOD FOR MONITORING MACHINING CONDITION OF MACHINE TOOL

Toshiaki Watanabe, Kasugai, and Hideo Yuhara, Nagoya, both of Japan, assignors to Okuma Machinery Works, Ltd., Kita-ku, Nagoya-shi, Japan

Filed Oct. 20, 1972, Ser. No. 299,562

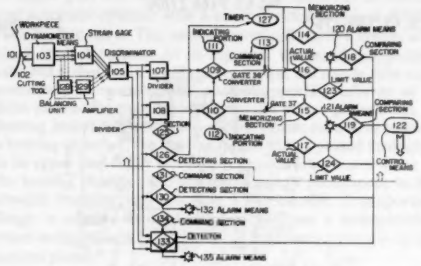
Claims priority, application Japan, Mar. 23, 1972, 47-29248

Int. Cl. G01b *5/28*

U.S. Cl. 235—151.11 **6 Claims**

In a machine tool having a work holder and a cutting tool which is brought into cutting engagement with a workpiece held on the work holder to machine the same, the reaction force on the cutting tool is detected in the form of three components, that is, a backing force component, a feeding force component and a main force component to obtain ratios of

one component to the other two components. The ratios are then compared with coresponding reference values which



vary in accordance with the initial values of the ratios, so as to detect abnormal conditions of the cutting tool.

3,834,616

MULTIPLEXING CONNECTION BETWEEN A KEY BOARD AND AN INTEGRATED CIRCUIT DEVICE

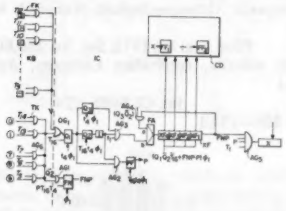
Isamu Washizuka, Kyoto, and Masaru Kaumae, Yamatokoriyama, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Sept. 13, 1972, Ser. No. 288,493

Claims priority, application Japan, Sept. 13, 1971, 46-71082

Int. Cl. G06f *3/02*; H03k *13/256*

U.S. Cl. 235—160 **14 Claims**



The present disclosure is directed to a multiplexing connection arrangement for use between a key board and an integrated circuit device for introducing key signals into the integrated circuit. The arrangement enables multiplexing transmission between the keyboard and the integrated circuit device with a reduction of the necessary number of connection terminals integrated circuit device for receiving the key input information. The individual key information is respectively taken out from the key board at different timing intervals not overlapping each other in time. Addition is repeatedly carried out during the period beginning at the appearance of the key signals and ending at a time boundary marker, so that the key inputs are introduced in a binary fashion into the integrated circuit through the minimum connection terminals. The arrangement is used in desk-top electronic calculators, electronic price-computing scales, electronic cash registers, etc.

3,834,617

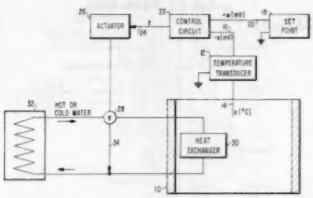
PID CONTROLLER FOR HEATING, VENTILATING AND AIR CONDITIONING SYSTEMS

Milos Dyntar, Steinhausen, Switzerland, assignor to Landis & GYR AG, Zug, Switzerland

Filed May 14, 1973, Ser. No. 359,919

Int. Cl. G05b *11/42*

U.S. Cl. 236—1 C **19 Claims**



A heating and/or air conditioning system including a novel controller of the PID type. A proportional integrator (PI) circuit is arranged to receive the output signal from a differentiator (D) circuit which has been delayed and inverted in a summing circuit together with an input control signal to thereby provide a PID controller having a negative delayed D influence. Such controllers are sometimes referred to as a PI-minus-D controller. The circuit employs operational amplifiers and the time delay provided by the differentiator circuit is 7 minutes as compared with the time constant of approximately 2 minutes for the integrator and the PI portion of the circuit. The PID controller as disclosed operates through a broad range of frequencies between about 20 seconds and 50 minutes to produce a substantially optimum regulation of the fuel or heat exchanging medium control valve without the need for a separate field adjustment by the installation mechanic.

3,834,618

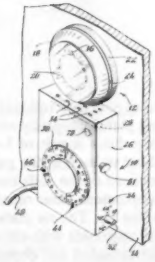
TEMPERATURE SETBACK CONTROL

Leonard Buckwalter, Weston, Conn., assignor to Louis H. Keens, Milton, Conn., a part interest

Continuation-in-part of Ser. No. 385,857, Aug. 6, 1973, abandoned. This application Feb. 11, 1974, Ser. No. 441,419

Int. Cl. H01h *37/14*

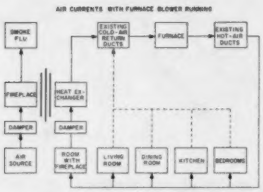
U.S. Cl. 236—46 **17 Claims**



A temperature setback control is described which may be conveniently utilized with existing heating systems by mounting the control within an air-flow influencing distance from a conventional thermostat which controls the heating system. The control produces a convection flow of heated air during a setback time period to obtain a temperature setback level in the room heating zone or building in which the thermostat is located. A temperature sensor regulates the operation of the

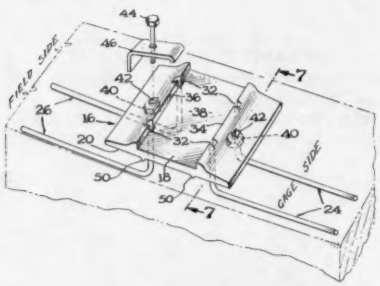
control to maintain the room at the setback temperature level. A housing to enable the influencing of the thermostat with the convection flow of heated air is described.

3,834,619
FIREPLACE SYSTEM
Donald F. Glover, 4128 Sir Walter Rd., Olney, Md. 20832
Filed Jan. 2, 1974, Ser. No. 430,075
Int. Cl. F24b *7/00*
U.S. Cl. 237—81 **10 Claims**



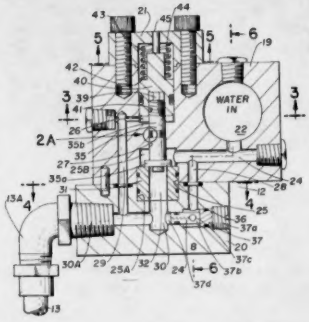
This fireplace system consists of an integrated fireplace heat exchanger and forced air furnace. The heated air from the fireplace heat exchanger flows to the furnace cold air return duct, through the furnace and thence to the structure. A preferred fireplace heat exchanger for use in this system is a downdraft heat exchanger.

3,834,620
PRECAST RAILROAD TIE AND TIE PLATE
Jamie S. Barlett, 6927 Green Hill, Tampa, Fla. 33617
Filed Dec. 19, 1972, Ser. No. 316,567
Int. Cl. E01b *2/00, 9/00, 9/40*
U.S. Cl. 238—287 **27 Claims**



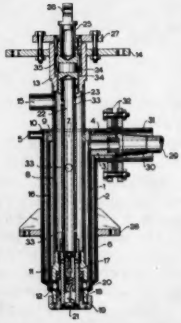
A reenforced precast concrete railroad tie having rail supporting and anchoring plates integrally molded thereinto. The rail plates in one form have a pair of L-shaped anchor and reenforcing rods welded to each of the gage and field sides of the tie plate, with portions of the rods having substantial longitudinal length to supplement other reenforcing rods molded longitudinally within the tie. The tie plate is further provided on its generally planar underside with either a welded on or integrally formed fixed threaded nut depending between each pair of the L-shaped rods at the gage and field sides to accomodate complementally threaded bolts cooperating with rail clip fasteners, the bolts passing through tie-plate-formed apertures correspondingly aligned with the threaded opening in the nuts. In another form the L-shaped rods are replaced by inverted T ot π shaped rods. A novel apparatus subassembly and related method utilizing presently conventional components and techniques in a novelly improved manner is also contemplated herein.

3,834,621
FLUID DELIVERY SYSTEM
Amos Pacht, and Hubert E. Magee, Jr., both of Houston, Tex., assignors to Partek Corporation of Houston, Houston, Tex.
Filed Oct. 13, 1972, Ser. No. 297,216
Int. Cl. F16k *21/00*
U.S. Cl. 239—76 **11 Claims**



A high pressure fluid delivery system is disclosed in which two or more guns, each having a high pressure nozzle outlet and a low pressure dump outlet, may be connected to and operated from the same pump. Pressure responsive control apparatus is provided in the flow line between each gun and the pump and each such apparatus includes a valve responsive to the fluid pressure at its respective gun for directing fluid either directly to such gun when flow is through the gun nozzle, or through an orifice in said apparatus substantially the same size as the nozzle orifice of such gun when the gun is dumping.

3,834,622
FILLING NOZZLE WITH HEATING JACKET
Leo Berg, Hurth-Alstadten, Germany; Gerhard Johann Lenemann, Middelbourg, Netherlands, and Johannes Wilhelmus Kinneging, Schwalbach/Hessen, Germany, assignors to Knapsack Aktiengesellschaft, Knapsack bei Koln, Germany
Filed Aug. 15, 1972, Ser. No. 280,806
Claims priority, application Germany, Aug. 18, 1971, 2141314
Int. Cl. B05b *1/24*
U.S. Cl. 239—132.1 **5 Claims**



Liquid yellow phosphorus is filled into drums with the use of a filling nozzle or lance. The nozzle or lance substantially comprises a control tube provided with a plurality of perforations

and connected at its top end portion to a cylindrical member which carries an eye for the connection of a control unit via a connecting piece of tubing. A nozzle supporting tube which concentrically surrounds the control tube and is provided in its upper part with a warm water inlet, carries at its bottom end a control cylinder with a control piston having a drilling running through it. The control piston is fixed to a nozzle tube via a conical bottom. At its top end, the nozzle supporting tube has a gland with a supporting flange, the nozzle tube concentrically surrounding the nozzle supporting tube so as to form an annular chamber receiving the yellow phosphorus. A heating jacket is disposed around the nozzle tube so as to form a heating chamber, the heating jacket having passed through it in its upper part firstly a double tube delivering warm water to the heating chamber and delivering yellow phosphorus to the annular chamber, and secondly a water outlet. A supporting flange is secured to the heating jacket, and a spring-loaded water outlet valve is provided in the bottom end portion of the control piston.

The installation filling drums with liquid phosphorus with the use of the filling nozzle of lance substantially comprises a roller track which is arranged in inclined position.

A rotating table is mounted after the fashion of a turret in the pivot on a vertical shaft. A stationary filling column is secured to the periphery of the rotating table, with filling nozzle. A switch and control desk are arranged at the back of the filling column, and a level driven roller track and a stripper are arranged on the periphery of the rotating table at the point at which the roller track commences.

3,834,623

SPRAYING SUBSTANCES

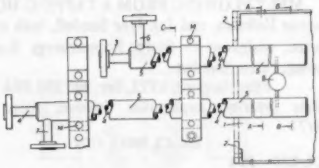
John Terence Sullivan, and Robert George Littlefair, both of Stockton-on-Tees, England, assignors to Imperial Chemical Industries Limited, London, England

Filed July 27, 1973, Ser. No. 383,294

Claims priority, application Great Britain, Aug. 2, 1972, 36013/72

Int. Cl. B05b *1/24*

U.S. Cl. 239—139 **7 Claims**



Apparatus for spraying substances which are solid at ambient temperatures, using an atomising nozzle having an inlet for compressed air, an inlet for liquid, and an outlet for spraying mixed air and liquid, comprises a steam-jacketed pipe for compressed air connected to the air inlet and a steam-jacketed pipe for the substance connected to and through the liquid inlet so as to deliver the molten substance substantially up to the spray outlet.

3,834,624

APPARATUS FOR FLUIDIZING POWDERS

Jan Novosad; Vladimir Bazant; Vlastimil Smid, and Ratibor Majzlik, all of Praha, Czechoslovakia, assignors to Ceskoslovenska akademie ved, Praha, Czechoslovakia

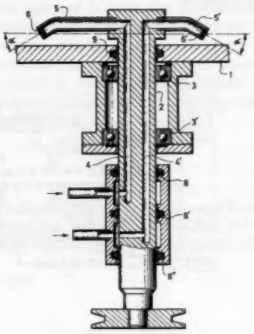
Filed June 27, 1973, Ser. No. 374,014

Claims priority, application Czechoslovakia, June 27, 1972, 4566-72

Int. Cl. B05b *3/02*; **F23d** *11/04*

U.S. Cl. 239—214.15 **7 Claims**

The apparatus comprises a vertical vessel provided with a rotating gas-feed unit for maintaining powders in a fluidized state. The rotating gas-feed unit is provided above the bottom of the vessel with at least one tube extension terminating in a nozzle. The gas-feed unit may contain a plurality of tube extensions with nozzles, the tube extensions having different lengths and being bent in such a way, that the longitudinal axis



of the nozzles forms an angle of 0° – 90° with respect to a radial direction passing through the nozzle opening in the direction of nozzle rotation and an angle of 0° – 45° in the same plane in the direction towards the bottom of the vessel. The vessel can be provided by several gas-feed units to which mixer blades may be attached.

3,834,625

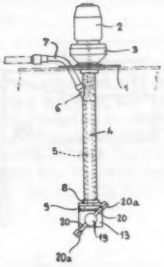
DESCALING APPARATUS WITH ROTARY JETS

Jean Barthod-Malat, 21 rue Baraban, Lyon, France

Filed June 20, 1973, Ser. No. 371,759

Int. Cl. B05b *3/00*, *13/06*

U.S. Cl. 239—227 **4 Claims**



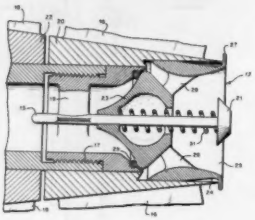
In an apparatus with rotary jets of the kind wherein the jet unit is rotatably carried by a support which rotates about an axis perpendicular to the axis of the said unit (as for instance, the axis of the jet unit being horizontal and the axis of the support vertical), the support drives the jet unit through a speed reducing gearing with perpendicular axes (as for instance a worm gearing) which receives its motion from a planet pinion carried by the support and in mesh with a fixed crown gear, the number of teeth on the pinion and on the crown gear being incommensurable so that the jet unit is at different angular positions after each full revolution of the support.

3,834,626

BELLMOUTH VEHICLE EXHAUST PORT

Maurice M. Sevik, and Fred E. Smith, both of State College, Pa., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 6, 1970, Ser. No. 31,052
Int. Cl. B64d *33/04*
U.S. Cl. 239—265.13 2 Claims



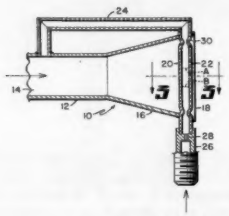
Subject disclosure relates to a unique exhaust nozzle for an underwater vehicle which minimizes the generation and radiation of acoustic energy over a wide band of frequencies. The improved exhaust nozzle structure comprises an external annular lip that extends outwardly at a right angle to the longitudinal axis of the vehicle and forms a cavity downstream from the vehicle into which combustion gases of the vehicle are noiselessly discharged.

3,834,627

FLAT AIR-BLAST FUEL INJECTOR

Sidney C. Watkins, Bridgeport, Conn., assignor to Avco Corporation, Stratford, Conn.

Filed Apr. 2, 1973, Ser. No. 346,768
Int. Cl. B05b *7/08*, *7/12*; F02c *7/22*
U.S. Cl. 239—430 9 Claims



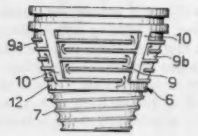
A fuel injector comprises a duct receiving pressurized air and having an elongated slot as a closed flared end. A fuel distribution manifold is positioned within the conduit adjacent the slot and has a series of spaced discharge ports for directing fuel out of the manifold. A momentum balance is achieved between fuel which enters the manifold at one end and air entering at the other end of the manifold to provide discharge of fuel from a varying numbr of openings. This automatically provides a uniformly distributed fuel/air mixture for given levels of fuel flow irrespective of variations in air density. The injector is also provided in annular form for use in an annular combustor of a gas turbine engine.

3,834,628

TRICKLE IRRIGATION DEVICE

Herzl Selman, Ramot Hashavim, Israel

Filed Mar. 20, 1973, Ser. No. 342,964
Claims priority, application Switzerland, Apr. 25, 1972, 6140/72; South Africa, Jan. 29, 1973, 73/0636
Int. Cl. B05b *1/30*
U.S. Cl. 239—542 10 Claims



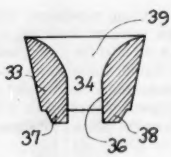
Trickle irrigation devices are described comprising an outer housing and an inner core. The contacting surfaces of the housing and core define a chamber and a plurality of separate parallel labyrinths each communicating with the chamber. The core is fixed within the housing by means of threads which define a spirally-extending conduit providing a path, between the water inlet and the chamber to the labyrinths. In one described embodiment, the core is a unitary member formed with both the threads and the labyrinth configuration; and in a second described embodiment the core comprises two sections, one being formed with the threads, and the other being a replaceable annular insert formed with the labyrinth configuration.

3,834,629

METHOD AND MEANS FOR SHAPING A STREAM OF MELT FLOWING FROM A TAPPING HOLE

Per Ingvar Hellman, and Jan Ivar Sondell, both of Soderfors, Sweden, assignors to Stora Kopparbergs Bergslags Aktiebolag, Falun, Sweden

Filed Aug. 18, 1972, Ser. No. 281,984
Claims priority, application Sweden, Aug. 24, 1971, 10748/71
Int. Cl. B05b *1/04*
U.S. Cl. 239—594 4 Claims



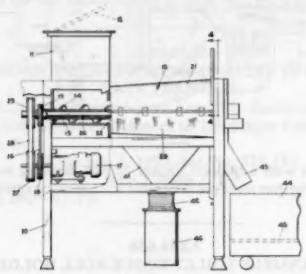
A falling stream of a liquid tends to obtain a circular cross sectional shape, owing to the surface tension of the liquid. In the manufacture of metal powder by atomizing a falling stream of molten metal it is desired, however, that the stream shall have a flattened cross sectional shape. It has been found useful to make the molten metal flow through an orifice having a rectangular cross sectional area, and to make the molten metal follow the short sides of the orifice for a longer distance than it follows the long sides of the orifice.

3,834,630

RECOVERY OF PACKAGED CONTENTS

William B. Nelson, London, England, assignor to Gunson's Sortex, Limited, London, England

Filed June 2, 1972, Ser. No. 259,208
Claims priority, application Great Britain, Nov. 26, 1971, 54988/71
Int. Cl. B02c *13/08*
U.S. Cl. 241—19 16 Claims



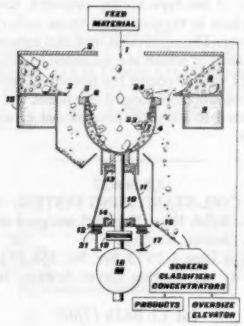
A package opening apparatus and method to recover contents of packages of paper and other tearable materials wherein the packaging material is beaten and shredded in a separating container or zone, the contents of the package is passed through holes in the separating container or zone, and the packaging material is blown by a draft induced within the separating container or zone out through an outlet in the separating container or zone.

3,834,631

SPIN BREAKING PROCESS

Thomas C. King, Florence, Ariz. 85252

Filed Apr. 18, 1973, Ser. No. 352,226
Int. Cl. B02c *19/00*
U.S. Cl. 241—26 22 Claims



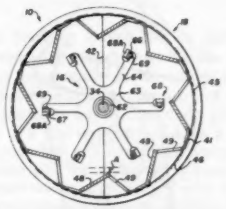
A tensile-type crushing system combined with autogenous grinding. A symmetrical bowl-shaped element is rotated at high speed, and is autogenously lined with centrifuged material in process. Combined intermediate crushing, fine crushing and grinding is accomplished as pieces of feed material are accelerated by frictional contact with the autogenous bowl lining to high rotative or spin velocities about their own centers of gravity on their spiral path out of the bowl such that internal fracture is obtained when internal centrifugal force exceeds the tensile strength of the material itself. Simultaneously, additional crushing and grinding is obtained in compression and shear as a result of impact, abrasion and attrition between the particles themselves and the autogenous bowl lining in the process of acceleration in the bowl, and the process of deceleration in a surrounding stationary annular trap chamber, also autogenously lined in the impact zone of projected material with material in process. Some recycle of material projected from the rotating bowl is obtained by rebound from the trap chamber. A novel method of gyro-stabilizing the rotating bowl is used to compensate for unbalanced forces inherent in large size feed material. Efficient crushing is obtained by centrifugally induced tensile stress which requires less energy than crushing by compression stress. Contamination of product from manufactured linings and grinding media is minimized. The system may be employed with standard closed circuit screening, classification or concentration processes.

3,834,632

IMPACT ORE MILL

Wesley E. Docksteader, P. O. Box 758, Grand Forks, Canada

Filed Jan. 8, 1973, Ser. No. 321,723
Claims priority, application Canada, Jan. 18, 1972, 132802
Int. Cl. B02c *13/06, 13/30*
U.S. Cl. 241—187 10 Claims



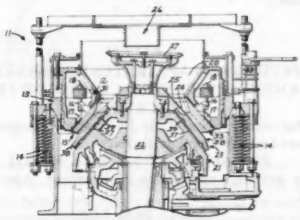
A mill is provided for crushing ore by impaction which has a rotor and a drum driven in the same direction at varying speeds. The axis of rotation of the drum can be shifted relative to the axis of rotation of the rotor to selectively adjust the spacing between beater blades on the rotor and impact plates carried by the drum. Seals are provided between the rotor shaft and the side walls of the drum to allow this relative movement to take place. The beater blades are each made up of identical parts which can be rearranged on the rotor to compensate for wear.

3,834,633

BOWL AND MANTLE ASSEMBLY FOR CONE CRUSHERS

James R. Dougall, New Brighton, and Alvin Donald Moll, St. Paul, both of Minn., assignors to Minneapolis Electric Steel Castings Company, Minneapolis, Minn.

Continuation of Ser. No. 243,688, April 13, 1972, abandoned. This application Dec. 10, 1973, Ser. No. 423,547
Int. Cl. B02c *2/04*
U.S. Cl. 241—295 17 Claims



Liner assemblies for the bowl and mantel of a gyratory cone crushing machine. Each assembly includes a liner backing

plate formed from a material of low abrasion resistance, such as mild steel, and which takes the form of a truncated cone to conform to the associated bowl or mantle. The crushing surface of the liner assembly is defined by a plurality of arcuate segments cast from martensitic white iron or steel and having a thickness substantially greater than that of the backing plate. The segments are arranged in ring fashion on the backing plate and secured thereto with a resilient adhesive such as urethane.

3,834,634

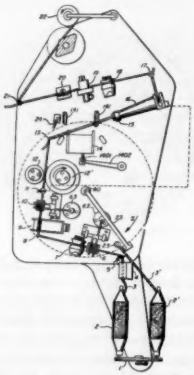
METHOD OF CONTROLLING THE KNOTTING PROCEDURE IN TEXTILE MACHINES, PARTICULARLY AUTOMATIC WINDING MACHINES AND PNEUMATIC CIRCUIT FOR PERFORMING SAID METHOD

Jiri Havlas; Premysl Kostelecky, and Jaroslav Sedlarik, all of Liberec, Czechoslovakia, assignors to Elitex, Zavody Textilniho Strojirenstvi generalni reditelstvi, Liberec, Czechoslovakia

Continuation-in-part of Ser. No. 33,477, April 30, 1970, abandoned. This application Dec. 7, 1970, Ser. No. 95,542

Int. Cl. B65h *54/22*

U.S. Cl. 242—35.6 R **13 Claims**



Improved method and apparatus for controlling the yarn knotting procedure in textile machines. The invention is particularly adapted for application of winding machines having a source of supply of yarn from which the yarn travels to the winding mechanism, and a knotting mechanism disposed downstream of the winding mechanism. The apparatus includes means for detecting the absence of yarn under tension in a zone downstream of the knotting mechanism, fluid pressure means for initiating the operation of the knotting mechanism, a source of fluid under pressure, conduit means including a valve means selectively connecting the fluid pressure source and the means for operating the knotting mechanism, and means operated by the yarn tension detecting means for operating the valve means to actuate the knotting mechanism.

3,834,635

METHOD AND APPARATUS FOR BRAKING FILAMENTARY MATERIAL UNWOUND FROM A PACKAGE

Erwin Pfarrwaller, Winterthur, Switzerland, assignor to Sulzer Brothers Ltd., Winterthur, Switzerland

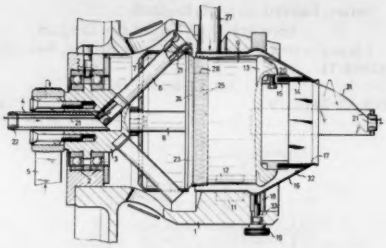
Filed Apr. 19, 1973, Ser. No. 352,831

Claims priority, application Switzerland, Apr. 28, 1972, 6404/72

Int. Cl. B65h *51/02*

U.S. Cl. 242—47.01 **18 Claims**

The braking device is constructed and positioned to act on the filamentary material from within the balloon formed by the material during an unwinding step, for example, for a pick in a weaving machine. The braking device can be used in



cooperation with a balloon limiter or not. Braking occurs as soon as no further material is needed for a picking operation.

3,834,636

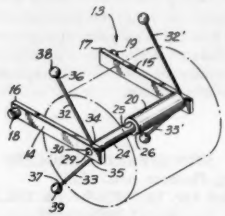
EXTENSIBLE TOILET TISSUE ROLL HOLDER

Richard Linick, 62-10 99th St., Rego Park, N.Y. 11374

Filed Nov. 15, 1973, Ser. No. 415,981

Int. Cl. B65h *19/00*

U.S. Cl. 242—55.2 **11 Claims**



Apparatus for adapting existing wall mounted toilet tissue support fixtures of the type having opposed, inwardly facing roll support sockets to receive toilet tissue rolls of larger than standard diameter. The apparatus includes extensible support bars, the inner ends of which are mounted in existent fixtures, the outer ends of which receive the tissue roll, and strut means which may be variably positioned to enable the apparatus to be accommodated to varying dimensional characteristics of existing fixtures.

3,834,637

COIL STABILISING SYSTEM

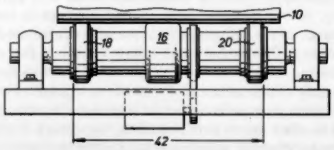
Geoffrey Ronald Reed, Ham, England, assignor to British Steel Corporation, London, England

Filed June 4, 1973, Ser. No. 366,291

Claims priority, application Great Britain, June 5, 1972, 26090/72

Int. Cl. B65h *17/08*

U.S. Cl. 242—65 **7 Claims**



An apparatus for supporting a coil of strip material and for rotating it about its polar axis comprises two sets of rollers ar-

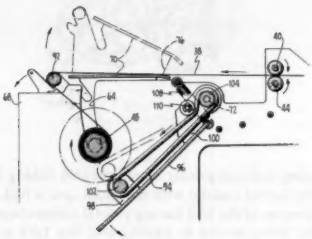
ranged in parallel side-by-side relation, each set of rollers being coaxial upon a shaft. One driven roller is provided to rotate the coil by frictional engagement therewith, the remaining said rollers being idlers whose peripheral speed is permitted to vary compared to that of the driven roller to accommodate local variations in the peripheral speed of the coil which may arise due to local variations in coil radius. The width of the coil contacting surface of each roller constitutes a minor portion only of the axial distance spanning the said surfaces of the two rollers axially most distant from each other.

3,834,638

ASSEMBLY FOR SPOOLING AN AUDIT TRAIL IN A DATA TERMINAL

James G. Savage, Newark, and Arnold L. Hawkins, San Leandro, both of Calif., assignors to The Singer Company, New York, N.Y.

Filed Jan. 5, 1973, Ser. No. 321,196
Int. Cl. B65h *17/00*
U.S. Cl. 242—67.1 R **4 Claims**



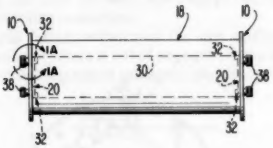
An assembly for facilitating spooling of a roll of record media, such as paper, to provide a permanent record of all transactions entered into a point-of-sale terminal comprising a movable belt engageable with the paper to rotate the paper and spool to wind the paper onto the spool, thus automatically compensating for the change of diameter of the roll.

3,834,639

MOUNT FOR CYLINDRICAL ROLL

Walter W. Barber, 31830 Trenor Ave., Hayward, Calif. 94514

Filed Apr. 13, 1973, Ser. No. 351,053
Int. Cl. B65h *75/02*
U.S. Cl. 242—68 **13 Claims**



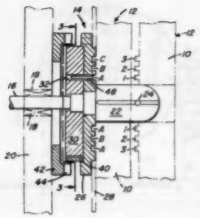
Mounting structure for each end of a cylindrical roll, such as a length of photographic film wound on a central, tubular core of a penetrable material, such as cardboard or the like. The structure comprises a generally circular flat plate having a central, circular projection on one face thereof. The projection is receivable within one end of the core and has lock means thereon accessible from the opposite face of the plate for releasably coupling the projection to the core. The plate, when attached to one end of the roll, can be supported on roller means, thereby allowing the roll to rotate about its central axis.

3,834,640

NORMALLY LOCKED SPINDLE MECHANISM UNLOCKABLE BY A COMPLIMENTARY CORE

Mark J. Devaney, Jr., Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed July 23, 1973, Ser. No. 381,451
Int. Cl. B65h *17/02, 75/02*
U.S. Cl. 242—68.3 **10 Claims**



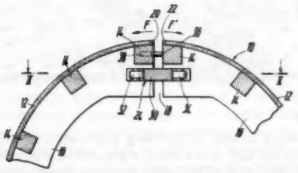
An improved normally locked spindle mechanism for a photographic processing apparatus or the like for preventing rotation of a core mounted thereon containing a film that is incompatible with the processing chemistry of the apparatus. The spindle mechanism has a core code structure that is responsive only to a film code structure on a core mounted thereon containing a film of a type that is compatible with the processing chemistry of the apparatus. In such instances, the film code structure coacts with the core code structure to unlock the spindle mechanism, allowing rotation of the core and the unwinding and feeding of the film therefrom into the apparatus. The core code structure is selectively changeable to conform to the processing chemistry for which the processing apparatus is programmed.

3,834,641

RETRACTABLE WINDING MANDREL

Bertrand P. E. Level, Le Vesinet, France, assignor to Plastrex-Manurhin S.A.R.L., Mulhouse Cedex, France

Filed Mar. 1, 1973, Ser. No. 337,020
Int. Cl. B65h *75/24*
U.S. Cl. 242—72.1 **3 Claims**



Retractable winding mandrel having a cylindrical casing slit in at least one location along the line parallel to the axis of the casing, there being abutments on the casing on each side of the slit and a cam means reciprocable between the abutments so as selectively to expend the casing, the casing being retracted or decreased in diameter when it is desired to remove a wound body therefrom.

3,834,642

APPARATUS FOR WINDING TAPES AND FILMS

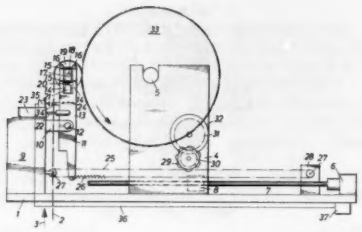
Eberhard Kampf, Munich, Germany, assignor to Erwin Kampf Maschinenfabrik, Munich, Germany

Filed Mar. 6, 1973, Ser. No. 338,638

Claims priority, application Germany, Mar. 24, 1972, 2214350

Int. Cl. B65h *23/00, 17/02*

U.S. Cl. 242—75.5 **12 Claims**



An apparatus for winding tapes and films where the support for the roll is lineally or pivotally displaced in response to the change in roll diameter which is sensed by electrical control means, and where a contact roller is applied against the roll with an adjustable predetermined pressure. The bearing for the contact roller is arranged to yield in response to the tape tension, the measurement of its displacement giving a continuous reading of the latter.

3,834,643

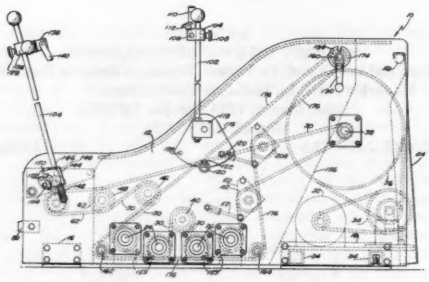
COIL STOCK CRADLE

Omer G. St. Sauveur, Holyoke, and Rudolph J. Adams, Chicopee, both of Mass., assignors to Carl G. Peterson Co., Smithfield, R.I.

Filed Sept. 17, 1971, Ser. No. 181,392

Int. Cl. B21c *47/22*

U.S. Cl. 242—78.7 **12 Claims**



A coil stock cradle comprising a plurality of support rolls upon which the coil stock rests, a pinch roll assembly through which the free end of the strip from the coil extends, feeler means positioned adjacent the path of the strip as the strip passes from the pinch roll assembly, whereby if a predetermined amount of slack ceases to exist in the uncoiled strip, the strip will engage the feeler means, which in turn energizes motor means for driving the support rolls and the pinch rolls to feed a further length of strip from the coil, the cradle further comprising adjustable guide plates for maintaining the coil properly positioned in the cadle, said plates being adjustable in or out as a unit or being individually adjustable in or out, all of said adjustments being controllable from either side of the apparatus. The cradle also comprises a support and guide assembly for properly supporting and guiding the strip as it passes to its intended use in a punch press or the like, said support and guide assembly and the aforesaid feeler means each being universally adjustable.

3,834,644

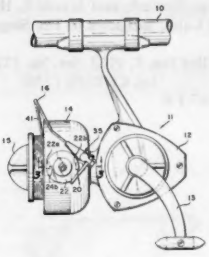
FISHING REEL AND APPURTENANCE

Carl Stackawicz, 73 N. Midland Ave., Kearny, N.J. 07302

Filed Nov. 28, 1972, Ser. No. 309,966

Int. Cl. A01k *89/00*

U.S. Cl. 242—84.2 G **10 Claims**



A spinning reel comprising a reciprocable fishing line spool, a rotatable carrier coaxial with the spool, and a bail and a line guide extension of the ball having pivotal connections with the carrier for being moved to casting and line take-in positions with reference to the spool, is characterized by the improvement which includes, line brake means connected with the bail and line guide on the carrier and comprising a finger forming a nip with the line guide and the nip being entrant accessibly to a fishing line being laterally moved longitudinally of the bail on a course toward one of the pivotal connections of the bail and line guide with the carrier.

3,834,645

CORD WINDING DEVICE

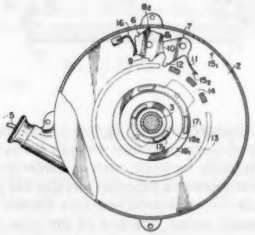
Toshinori Morishige, Tokyo, Japan, assignor to Starting Industry Company Limited, Tokyo, Japan

Filed Aug. 22, 1972, Ser. No. 282,664

Claims priority, application Japan, Feb. 5, 1972, 47-15297[U]; May 8, 1972, 47-53401[U]

Int. Cl. B65h *75/48*

U.S. Cl. 242—107.7 **7 Claims**



This invention relates to a cord winding device including an enclosed reel for receiving a length of cord, a spring for re-

winding the reel, and a rotatable latch cooperating with the ratchet and operable to alternately release the ratchet to permit free rotation of the reel and then latch the ratchet in position restraining the reel against re-winding. A brake for controlling the rotation speed of the reel can be provided.

3,834,646

TAKE-UP SPOOL LATCH

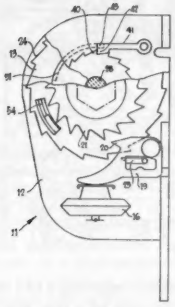
Robert Boyson Heath, St. Marys, Australia, assignor to Rainsford Metal Products Proprietary Limited, South Australia, Australia

Filed Nov. 6, 1972, Ser. No. 303,965

Claims priority, application Australia, Nov. 9, 1971, 6940/71

Int. Cl. B65h *75/48*

U.S. Cl. 242—107.7 **9 Claims**



A take-up spool latch for a seat belt retractor of the type comprising a spool journalled for rotataion in a spool frame and incorporating a torsion spring for retracting a seat belt,

the latch having a clutch member and a brake member with means between them limiting relative movement, both the clutch and brake members having cam surfaces thereon which are engaged by a pawl which co-operates with a ratchet on the spool and is so arranged that:

a. upon retraction of a seat belt which has been withdrawn from the spool the cam surfaces retain the pawl out of engagement from the ratchet teeth,

b. upon initial further withdrawal and during the limited rotation between the brake and clutch member the pawl is released by the cam surfaces and engage the ratchet teeth thereby preventing retraction,

c. upon still further withdrawal the cam surfaces again engage the pawl and retain it out of engagement from the ratchet teeth, so that full retraction can again take place.

3,834,647

DEVICE FOR HOLDING A SPINDLE FOR DRAWING-OFF OF A YARN

Erhard Thaddaus May, Kempten, Germany, assignor to A. Ott, Kempten, Germany

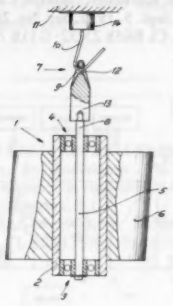
Filed Jan. 15, 1973, Ser. No. 323,721

Claims priority, application Germany, Jan. 18, 1972, 2202086

Int. Cl. B65h *49/02*

U.S. Cl. 242—130.2 **9 Claims**

The spindle axle is disposed in vertical relation and is suspended at one end via an eye and hook so that the yarn is free to swing in a pendular manner. A damping means is also



disposed between the hook and a fixed support point to damp vibrations.

3,834,648

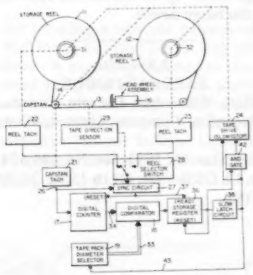
APPARATUS AND METHOD FOR SENSING DIAMETER OF TAPE PACK ON STORAGE REEL

Marshall G. Rose, Jr., Milpitas, and Harold V. Clark, Palo Alto, both of Canada, assignors to Ampex Corporation, Redwood City, Calif.

Filed Mar. 15, 1972, Ser. No. 234,758

Int. Cl. B65h *25/00*; **G11b** *15/32*; **G06m** *1/272*

U.S. Cl. 242—186 **6 Claims**

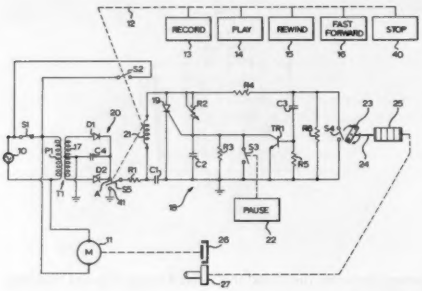


An end of tape sensor for sensing the approaching end of a supply of magnetic tape on a storage reel on a tape transport and for producing a control signal for controlling the tape drive means includes a feed tachometer means for detecting longitudinal tape speed, reel tachometer means for detecting reel rotational speed, digital counter means responsive to said feed and reel tachometer means for developing a digital signal representing the ratio of longitudinal tape speed to reel rotational speed, a tape pack diameter selector for producing a preselected digital ratio of longitudinal tape speed to reel rotational speed corresponding to a desired terminal tape pack diameter and digital comparator means for comparing said digital signal with said preselected digital ratio, said comparator including a storage register which produces a control signal to control said tape drive means when said digital signal and said preselected digital ratio achieve a plurality of matches in succession.

3,834,649
CONTROL NETWORK

Joseph Papay, Kitchener, Ontario, Canada, assignor to Electrohome Limited, Kitchener, Ontario, Canada

Filed Sept. 5, 1972, Ser. No. 286,290
Int. Cl. B65h *25/32*; **G11b** *15/46*
U.S. Cl. 242—191 **10 Claims**

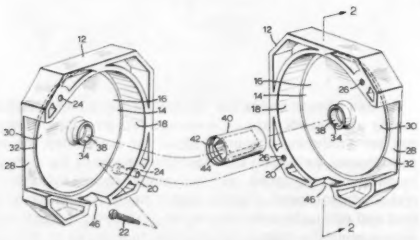


A control network that may be used to automatically turn off the drive motor and/or the mechanical drive of a tape deck when the tape has reached the end of its travel, but which also has many other uses, includes a capacitor that is connected to be charged from a source of D.C. potential. A circuit for discharging this capacitor includes a current responsive control device and a controlled discharge device having anode, cathode and control electrodes. A second capacitor connected to be charged from a source of D.C. potential is connected in circuit with the control electrode to control the operation of the controlled discharge device responsive to the charge on the second capacitor. Means are provided for discharging the second capacitor during normal operation of the tape deck or other device at a repetition rate such that insufficient charge builds up on the second capacitor to trigger the controlled discharge device.

3,834,650
TAPE CARTRIDGE

Peter Joseph Hall, Willowdale, Ontario, Canada, assignor to Microfilm Recording Company Limited, Weston, Ontario, Canada

Filed Mar. 30, 1973, Ser. No. 346,654
Int. Cl. G03b *1/04*; **G11b** *15/32, 23/04*
U.S. Cl. 242—192 **5 Claims**

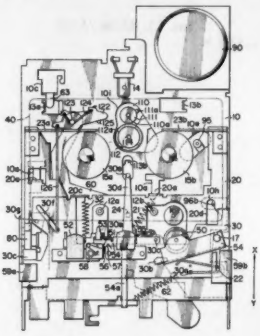


A tape cartridge for fully winding a tape and a leader of greater width than the tape within the storage chamber formed within the housing. A pair of oppositely disposed winding shoulders are formed one on each end wall of the housing and extend substantially circumferentially thereof to receive the marginal edges of the leader while permitting the narrower tape to pass therebetween to be wound onto a spool which is rotatable within the housing. A passage opens outwardly from the chamber from within the housing to provide access to a leader mounted on the shoulder to permit the leader to be driven out of the chamber by being engaged by a roller or the like.

3,834,651
CASSETTE TAPE RECORDER

Shin Hashizume, Mito; Takashi Kubota, Katsuta; Katsuo Usui, Katsuta, and Hitoshi Ogasahara, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 19, 1973, Ser. No. 342,413
Claims priority, application Japan, Mar. 21, 1972, 47-27388
Int. Cl. G03b *1/04*; **G11b** *15/32, 23/04*
U.S. Cl. 242—199 **9 Claims**

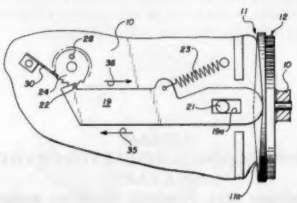


A cassette tape recorder comprising a first motor for effecting a constant speed advance of a tape in a cassette and a second motor for effecting a fast advance of the tape, the second motor being adapted to be energized when the tape end is reached during the constant speed tape advancing operation, so as to terminate the constant speed advance.

3,834,652
FILM DRIVE FOR CINEMATROGRAPHIC APPARATUS

Gunter Sachs, Ruit a. F., Germany, assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sept. 12, 1972, Ser. No. 288,473
Claims priority, application Germany, Oct. 6, 1971, 7137843[U]; Oct. 6, 1971, 7137842[U]
Int. Cl. B11b *15/32*; **G03b** *1/04*
U.S. Cl. 242—205 **6 Claims**



In a cinematographic apparatus, such as a camera or projector, an improved film coil winding mechanism is provided for advancing and winding a received film strip into a coil in a take-up chamber of the apparatus or in a received film cartridge. The coil winding mechanism includes a pawl which is mounted for reciprocal movement for advancing a cooperating ratchet member and thereby causing the film to be ad-

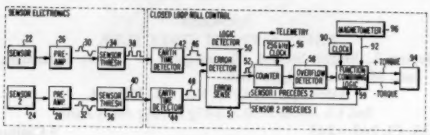
vanced. The pawl is driven in a first direction by drive means of the apparatus and energy is stored in the cooperating spring member such that when the pawl is released by the drive means and it becomes engaged with the ratchet member, the film is advanced as the pawl is driven in the reciprocal direction by the spring.

3,834,653

CLOSED LOOP ROLL AND YAW CONTROL FOR SATELLITES

Harold Perkel, Levittown, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 27, 1972, Ser. No. 238,483
Int. Cl. B64g *1/10*
U.S. Cl. 244—1 SA **7 Claims**



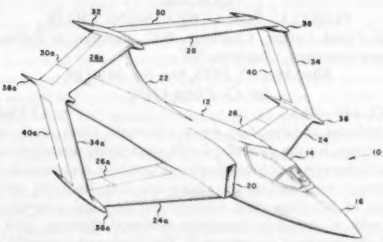
A magnetic torquing control system for the attitude control of pitch momentum biased satellites utilizing a closed loop for roll-axis control by interacting the satellite's magnetic dipole with the earth's magnetic field. The closed-loop system includes a pair of attitude sensors whose output error signals are processed in the satellite-mounted logic circuits to control correcting torques. At a predetermined clock-controlled time or, in response to control or sensing signals from a magnetometer, a torquer such as a magnetic dipole is energized at the position of its satellite's orbit relative to the magnetic equator to develop a magnetic field which interacts with the magnetic field of the earth to torque, primarily, the roll axis to correct thereby the errors in attitude of the pitch axis.

3,834,654

BOXPLANE WING AND AIRCRAFT

Luis R. Miranda, Sherman Oaks, Calif., assignor to Lockheed Aircraft Corporation, Burbank, Calif.

Filed Mar. 19, 1973, Ser. No. 342,823
Int. Cl. B64c *3/06*
U.S. Cl. 244—13 **15 Claims**



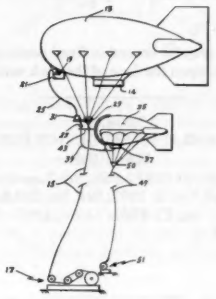
An aircraft wing system wherein a first pair of rearwardly swept wings is interconnected at the wing tips to a second pair of forwardly swept wings, the interconnection being accomplished by a pair of vertically swept fins, the two pair of wings being horizontally and vertically staggered relative to one another. Each pair of wings is also structurally attached to another aircraft component.

3,834,655

TETHERED BALLOON REFUELING SYSTEM

Edward L. Crosby, Jr., Indialantic, Fla., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Mar. 26, 1973, Ser. No. 344,786
Int. Cl. B64d *39/00*; B64b *1/50*
U.S. Cl. 244—135 R **3 Claims**



A system for refueling a tethered balloon while in flight by resupplying fuel to the auxiliary power unit without reeling in the main balloon. A nose ring attached to the tanker balloon guides it upward along the main balloon tether and serves to hold a probe on the fuel line in position to automatically engage a drogue which acts as an inlet for a pump mounted on a structure attached to the main balloon. Operation of the pump transfers the fuel from the tanker balloon to the fuel tank in the main balloon.

3,834,656

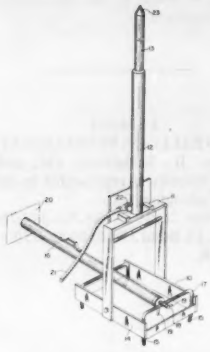
MEANS FOR MAINTAINING STABILITY OF ROCK DRILL BY REARWARD BRACING ANCHORAGE

Roland L. Hunter, Meridian, Idaho, assignor to Mel Barrett; Milt Olson; Joe Furnes; Frank Michial; Richard Hunter; Don Fredricks; Boyde Holfrook; Sherm Walkley; Ed Samuels; Ed Byrnes, all of Salmon; Dick Bell; Dunham Bell, both of Osburn; Ross Murrey, Pocatello; Steve Colyer, Star; James Hunter, Meridan; Chester Hunter, Caldwell, all of, Indonesia; Carley Jeffs; Dale Taylor, both of Clearfield; Gene Jeffs, Layton, all of, Utah, part interest to each and Dock & Dock, Arlington, Va., a part interest

Continuation-in-part of Ser. No. 699,739, Jan. 22, 1968, abandoned. This application May 25, 1973, Ser. No. 364,093
Int. Cl. E21c *5/11*; F15b *11/08*; E21c *11/00*
U.S. Cl. 248—13 **8 Claims**

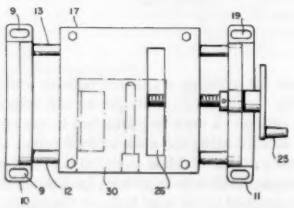
This invention relates to an extensible anchoring structure rigidly supported between two opposing walls of a mine stope,

or drift or tunnel, whereby the rearward portion of a rock drill



(the "jack leg") may be braced in fixed position to assure firm attack of the drill upon the face of the rock wall.

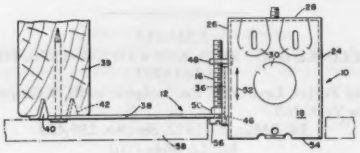
3,834,657
MOUNTING AND SUPPORT DEVICE FOR A ROTARY MACHINE
Antone Freitas, Jr., 14513 Elm St., San Leandro, Calif. 94579
Filed Nov. 8, 1972, Ser. No. 304,846
Int. Cl. F16m *11/04, 3/00*
U.S. Cl. 248—23 **3 Claims**



A support device for an alternator or generator includes a horizontal mounting plate which is laterally movable in relation to a driving source for the alternator or generator. The mounting plate is provided with a slot which receives and secures a bar from a generator support member or an alternator support member. The generator support member includes vertical arms in a channel-like configuration with a chain attached to the arms to secure a generator therebetween. The alternator support member includes a rod on which an alternator may be positioned by means of an aperture through the alternator. A drive belt secured between the driving source and the alternator or generator is properly tensioned by appropriate lateral movement of the mounting plate.

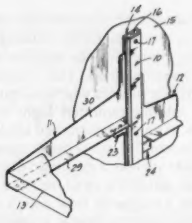
3,834,658
OUTLET BOX WITH ADJUSTABLE MOUNTING
Panos C. Theodorides, 595 River St., Mattapan, Mass. 02126
Continuation-in-part of Ser. No. 227,772, Feb. 22, 1972, abandoned. This application May 18, 1973, Ser. No. 361,398
Int. Cl. H02g *3/08;* **F16b** *2/24*
U.S. Cl. 248—205 R **3 Claims**

An electrical outlet box assembly comprising in combination a box and bracket slidable on a side wall of the box and adapted to be secured to a wall stud. A screw carried by the bracket registers with a threaded opening on the side wall.



When turned the screw causes the box to move on the bracket either in or out with respect to the wall surface.

3,834,659
SHELF SUPPORT STRUCTURE
Burton L. Siegal, Skokie, Ill., assignor to Tiffany Industries, Inc., Maryland Heights, Md.
Filed Mar. 9, 1973, Ser. No. 339,566
Int. Cl. A47b *47/00;* **A47g** *29/02;* **A47f** *5/00*
U.S. Cl. 248—245 **5 Claims**

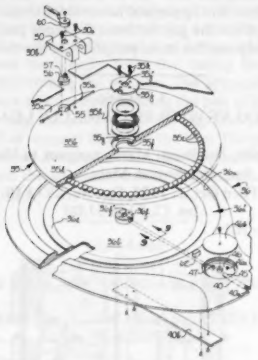


Shelf structure for positioning shelves in infinitely variable vertical positions between a pair of standards, the standards each having a vertically extending groove which receives a locking means arranged to be slidably mounted within the groove, the locking means having a gripping portion extending inwardly of the standards to permit vertical positioning of the locking means within the grooves, in combination with a shelf support means which has inclined wedge surfaces thereon arranged to engage complementarily shaped surfaces on the locking means to lock the shelf support at a predetermined vertical position along the standards.

3,834,660
PEDESTAL FOR A TREATMENT CHAIR
Dennis Frank Leffler, Charlotte, N.C., assignor to Pelton & Crane Company, Charlotte, N.C.
Filed May 17, 1973, Ser. No. 361,229
Int. Cl. F16m *11/30*
U.S. Cl. 248—418 **12 Claims**

A pedestal construction for a treatment chair, such as a dental chair, having a standard with electrically operated components thereon, such as electrical controls and motors for elevating, tilting and/or traversing the seat, backrest and/or leg rest of the chair, and wherein the pedestal comprises a base with a turntable rotatably mounted thereon, and on which the standard is supported. The base and turntable are constructed so as to accommodate therein portions of electrical conductor means which extend from a source through the base and the turntable to electrical components above the turntable in such a manner as to permit nearly a full revolution of adjustment of the turntable with the standard of the chair

thereon without placing the conductor means under undue strain, and also obviating the need for providing a substantial



coiled length of a conductor cable on the floor adjacent the chair in order to permit such adjustment of the turntable.

3,834,661

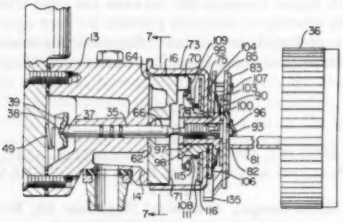
CONTROL SYSTEM AND CONTROL DEVICE THEREFOR OR THE LIKE

Francis S. Genbauffe, Irwin, Pa., assignor to Robertshaw Controls Company, Richmond, Va.

Continuation of Ser. No. 258,798, June 1, 1971, Pat. No. 3,780,940. This application Sept. 26, 1973, Ser. No. 400,788

Int. Cl. F23n *1/00*

U.S. Cl. 251—89 **10 Claims**



A control device for interconnecting a source of fuel to a burner, the control device having a valve seat and a movable valve member for controlling the valve seat. A movable selector is carried by the control device and a clutch is adapted to interconnect the selector to the valve member, the clutch having means for moving the valve member from an "off" position to a full "on" position thereof, as the selector is moved in one direction from its "off" position to a first position thereof. The clutch keeps the valve member in the full "on" position thereof as the selector is moved in the one direction from the first position thereof to a second position thereof. The clutch thereafter moves the valve member from its full "on" position to a reduced "on" position thereof as the selector is moved in the one direction from the second position thereof to a third position thereof, the clutch being adapted to move the valve member from the reduced "on" position thereof back to the full "on" position thereof as the selector is moved in a direction opposite to the one direction from the third position thereof to the second position thereof.

3,834,662

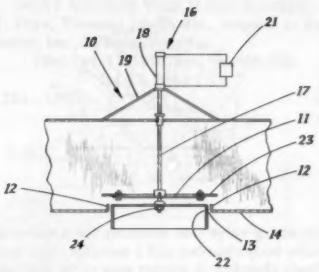
DAMPER

Robert G. Huntington, Louisville, Ky., assignor to American Air Filter Company, Inc., Louisville, Ky.

Filed May 31, 1972, Ser. No. 258,275

Int. Cl. F16k *47/00*

U.S. Cl. 251—121 **5 Claims**



A damper arrangement wherein a damper blade opens and closes a flow through damper port, the damper blade having baffle means attached to its port engaging side, the baffle means providing an opening of constant cross-section with the port during a portion of the stroke of the damper blade to provide a buffered transition when removing a fluid system from or returning a fluid system to full fluid flow, the damper blade additionally having a peripheral flexible portion which provides a positive seal between the blade and a seat surrounding the port.

3,834,663

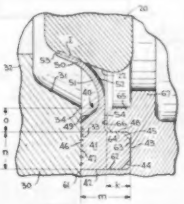
METAL SEAT BUTTERFLY VALVE

James F. Donnelly, Leicester, Mass., assignor to Jamesbury Corp., Worcester, Mass.

Filed Dec. 9, 1971, Ser. No. 206,337

Int. Cl. F16k *1/22*

U.S. Cl. 251—173 **2 Claims**



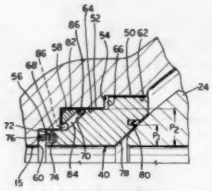
Disclosed is a butterfly valve particularly adapted for service with high pressure and high temperature fluids, and fluids containing suspended solids such as slurries. A butterfly valve is provided with a metal seat ring having a curved metal lip that is adapted to contact the peripheral surface of the valve disc. The metal seat has a configuration that enables fluid pressure from one side of the valve to enhance the sealing effectiveness of the valve. The lip of the seat is positioned to provide an interference fit with the periphery of the disc when the valve is closed, so that the valve is capable of sealing fluid from either side of the disc over a portion of the pressure rating of the valve.

3,834,664

BALL VALVE STRUCTURE HAVING PRESSURE ACTUATED SEATS

Eulas R. Atkinson, Conroe, Tex., assignor to ACF Industries, Incorporated, New York, N.Y.

Filed Mar. 5, 1973, Ser. No. 337,785
Int. Cl. F16k *5/06*
U.S. Cl. 251—174 8 Claims



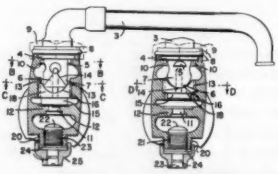
A double-acting valve seat assembly for a valve structure having a valve body chamber and a movable valve member in the valve body chamber. A greater area at the rear portion of the upstream seat assembly is exposed when upstream or flowline fluid pressure is greater than body fluid pressure. A separate annular member is mounted in the seat recess adjacent the valve body and is spaced from the adjacent seat assembly to form an annular back seal chamber having a width extending in a generally transversely direction with respect to the longitudinal axis of the valve. An annular seal is positioned in the back seal chamber for movement between inner and outer end portions of the back seal chamber and permits leakage behind the annular member from the valve body when positioned between innermost and outermost positions thereby to relieve excessive fluid pressures in the valve body.

3,834,665

WATER SUPPLY COCK

Takashi Kurioka, 15-15 chome, Higashinakamoto, Higashinariku, Osaka, Japan

Filed Nov. 21, 1972, Ser. No. 308,461
Claims priority, application Japan, Nov. 29, 1971, 46-96625
Int. Cl. F16k *31/524*
U.S. Cl. 251—349 5 Claims



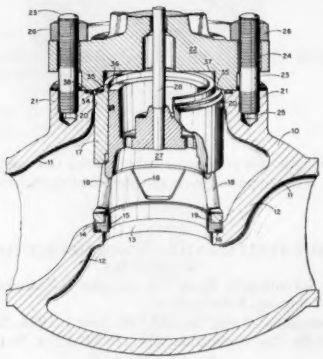
This invention relates to a water supply cock, the waterway of which is closed or opened by the oscillating turn of the water discharge pipe. The water cock assembly comprises a main casing, and an oscillatable water discharge pipe. The main casing comprises on the inner periphery slightly below the upper opening a formed circular projected edge. The oscillatable water discharge pipe comprises a cylindrical body downwardly bent at the base end. The cylindrical body comprises a flange midway the outer periphery thereof and a pad lug turnable through an angle of 180°, touchable to engaging members disposed uprightly at both sides of the inner chamber of the main casing, and located under the flange directly below the oscillatable water discharge pipe. The front portion at the lower end of the cylindrical body comprises a semicircular surface projected at the portion directly below the pad lug and an opening to the oscillatable water discharge pipe. The cylindrical body is inserted to be freely rotatable in the main casing with the flange of the cylindrical body rested on the circular projected edge of the main casing. Box nuts inlaid with packing are screwed on the outer periphery of the main casing from the upper and lower sides thereof to seal the water leaking from the gap between the outer periphery of the cylindrical body and the inner periphery of the main casing.

3,834,666

CONTROL VALVE WITH ELASTICALLY LOADED CAGE TRIM

Gareth A. Keith, Needham, Mass., assignor to Masoneilan International, Inc., Northwood, Mass.

Filed Oct. 2, 1972, Ser. No. 293,818
Int. Cl. F16k *51/00*
U.S. Cl. 251—361 1 Claim



Valve for fluid flow control, having cage type trim, and provided with means compressible between the cage trim and valve body whereby to resiliently pressure the cage against its seat. In a preferred embodiment, the elastically loaded or compressible means comprises a flat annular piece of resilient material.

3,834,667

HANDLING APPARATUS FOR LIFTING AND DISPLACING ARTICLES OF RELATIVELY GREAT WEIGHT

Jacobus Simon Sanger, Avenue A, Huysmans 80, Brussels, Belgium

Filed Aug. 10, 1972, Ser. No. 279,543
Claims priority, application Belgium, Aug. 19, 1971, 771508
Int. Cl. B60p *1/00*
U.S. Cl. 254—2 R 2 Claims

The apparatus is intended for lifting and displacing articles of relatively great weight and, more especially, of elongated shape, such as boats and other water craft, containers, and the like. To this end, the apparatus comprises a casing from which there extend a pair of parallel legs defining a free space therebetween. The legs are supported on wheels adjacent their free ends, and the casing is supported on a dirigible wheel, whereby the apparatus can travel over the ground. Each leg

carries a pair of jacks, one nearer its free end and the other nearer the casing. A diesel engine is supported on the casing and drives a hydraulic pump, and the pressurized hydraulic fluid from the pump is used to operate a hydraulic motor for forward and rearward movement of the apparatus, to operate the jacks, and to operate a steering device. A support extends rearwardly from the casing and carries a seat for an operator, and control handles for the motor and the various hydraulic circuits extend rearwardly from the casing for use by the operator in controlling the vehicle. The apparatus is used to lift and displace articles by extending the pair of legs under the article, operating the jacks to lift the legs and to, in turn, lift the article off of support blocks or the like. The jacks are then operated to lower the legs so that the support wheels contact the ground and the apparatus can then transport the article to a desired location.

3,834,668

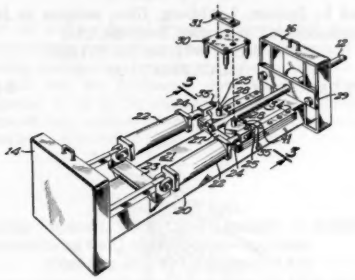
PIPE PUSHING APPARATUS

John William Casey, 138 William Ave., New Richmond, Wis. 54017

Filed Jan. 11, 1973, Ser. No. 322,853

Int. Cl. E21b *9/00*

U.S. Cl. 254—29 R **7 Claims**



Apparatus for driving a rod or pipe through the ground, including a hydraulically-actuated piston driving member coupled to a pair of pipe-gripping jaws which are themselves pivotally mounted on a slideable carriage assembly, wherein the driving member forces the jaws to clamp the pipe and simultaneously drives the slideable carriage assembly to force the pipe into the ground.

3,834,669

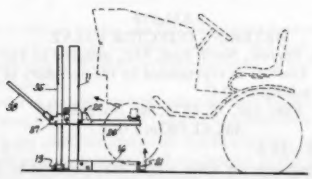
KNOCKDOWN JACK ASSEMBLY

Jay H. Reid, Barrington, Ill., assignor to Sears, Roebuck and Co., Chicago, Ill.

Filed Feb. 12, 1973, Ser. No. 331,801

Int. Cl. B66f *3/00*

U.S. Cl. 254—133 **5 Claims**



A knockdown jack assembly for elevating a suburban type riding tractor and the like. The assembly includes a conventional automotive jack having an upright standard with teeth along one surface and a lever actuated lift mechanism, a guide member disposed in parallel relation to the standard and a lift assembly slidable on the guide member, the lift assembly being detachably connected to the lift mechanism whereby movement of the lift mechanism will effect corresponding movement of the lift assembly which is adapted to support the vehicle.

3,834,670

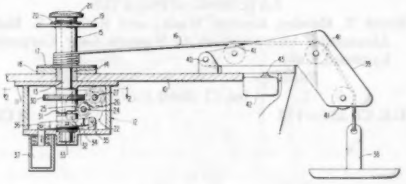
BOAT ANCHOR WINCH MECHANISM

Albert F. Pityo, Treasure Island, Fla., assignor to Reel Power Equipment, Inc., St. Petersburg, Fla.

Filed Oct. 11, 1973, Ser. No. 405,586

Int. Cl. B66d *1/24*

U.S. Cl. 254—150 R **14 Claims**



A fully enclosed housing for recuction gearing and clutch means is secured to the bottom of a boat deck with only a vertical axis winch spool and shaft projecting above deck. An electric motor attached to one side of the housing below deck forms a right angular drive through the reduction gearing with the winch spool shaft. A winch spool clutch is normally engaged by a spring means and can be disengaged remotely by a mechanical device or by the operation of a motor reversing switch and an associated solenoid to allow free-falling of the anchor.

3,834,671

LOWERING APPARATUS

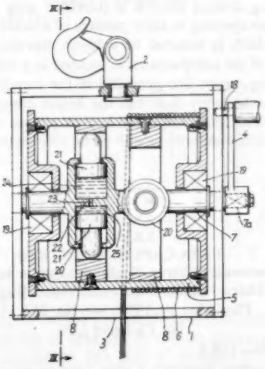
Godefroy L. M. Du Mesnil du Buisson, 44 bis, rue des, Versailles, France

Filed Aug. 16, 1972, Ser. No. 281,018

Claims priority, application France, Sept. 21, 1971, 71.33903; Jan. 24, 1972, 72.02202

Int. Cl. A62b *1/12*

U.S. Cl. 254—158 **5 Claims**



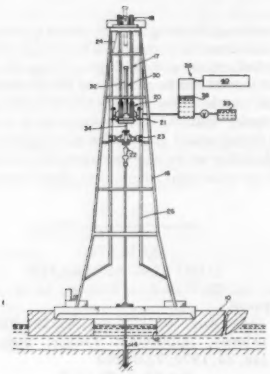
Apparatus for lowering a load from one level to a lower level (for example, for lowering a person to ground level from

a burning building) which comprises a drum rotatable about an axle normally fixed in a frame. A cable is wound around the drum and rotation of the drum due to a load on the cable is retarded by the action of an annular cam inside the drum which co-operates with a piston and cylinder device to cause relative reciprocating movement between the cylinder and piston against the action of a retarding element therein, either the cam or the cylinder and piston device being fixed with respect to the support while the other is rotatable with the drum during unwinding of the cable.

3,834,672
DRILL STRING HEAVE COMPENSATOR AND LATCHING APPARATUS

Royal T. Hawley, Everett, Wash., and Richard S. Hollyer, Alexandria, Va., assignors to Western Gear Corporation, Lynwood, Calif.

Filed Apr. 30, 1973, Ser. No. 355,553
Int. Cl. B66d 1/48
U.S. Cl. 254—172 **8 Claims**



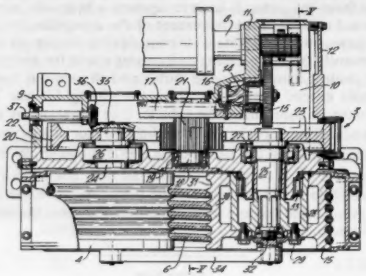
A floating drilling derrick is provided with a split crown block and an opening to allow passage of a heave compensator cylinder which is secured to a lower traveling block. The piston rod of the compensator is secured to a drill string carrier. Coupling means are provided in the traveling block and carrier to selectively lock out the heave compensator. The traveling block and carrier are kept in proper orientation by guides thereon cooperating with guide rails on the derrick.

3,834,673
TWIN CAPSTAN WINCHES

William Alexander, Elstree, England, assignor to Wharton Engineers (Elstree) Limited, Boreham Wood, England

Filed May 19, 1972, Ser. No. 255,175
Int. Cl. B66d 1/76
U.S. Cl. 254—175.5 **4 Claims**

The invention discloses a twin capstan winch including a chain of gears between a power input shaft and a pair of capstan wheels, such gear chain including reduction gears and at least one bevelled gear, whereby the axis of rotation of the capstan wheels is at right angles to the axis of rotation of the power input shaft, the majority of gears being mounted on shafts which lie in or close to the horizontal plane passing

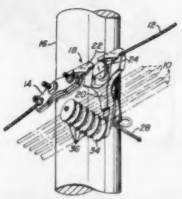


through the capstan wheels whereby to lower the centre of gravity of the device.

3,834,674
AERIAL BLOCKS

Richard L. Jackson, Lewisburg, Ohio, assignor to Jackson Communication Corporation, Brokville, Ohio

Filed Dec. 4, 1972, Ser. No. 311,805
Int. Cl. B66d 11/38
U.S. Cl. 254—190 R **8 Claims**



An aerial block for stringing cable from an existing supporting strand includes a casting forming a main frame having a pair of strand engaging hooks at its upper end and a downwardly depending central portion. The downwardly depending central portion has a series of vertically spaced openings formed through it which slidably receive a series of substantially identical, horizontally extending rods. Alternate rods beginning with the lowermost rod have a series of grooved sheaves rotatably mounted on them while the remaining rods serve as keeper rods and project in overlying relationship to the sheaves to prevent cable supported by the sheaves from being inadvertently displaced from them. Each of the rods has means frictionally engaging it to permit the rods to be fixed within the center frame at some preselected position.

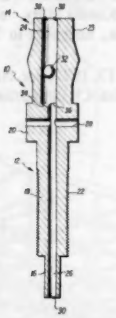
3,834,675
METERING INJECTOR VALVE

Desmond J. Farrow, North East, Md., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

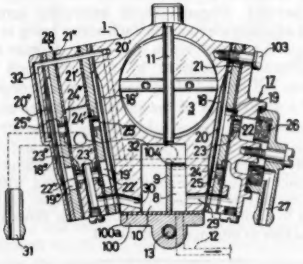
Filed Apr. 30, 1973, Ser. No. 356,039
Int. Cl. F02m 15/02
U.S. Cl. 261—18 A **5 Claims**

A metering injector valve which may be used in internal combustion engine carburetor idle systems includes a first valve housing and a second valve housing integral therewith, a first axial passageway being provided within the first housing while a second axially extending passageway, interconnected with the first passageway at the downstream end and with a

source of power-fluid at the upstream end, is similarly provided within the second housing. A metering ball is reciprocably disposed within the second passageway, and a diametrically extending passageway is provided within the rear portion of the first housing so as to be interconnected with the first passageway at its central portion and be open to the atmosphere at its outer portions. Under operative idle conditions, air and a metered amount of power-fluid may enter the diametrically extending passageway and the second axially extending passageway respectively, whereupon such fluids may mix and be conducted downstream of the first passageway so as to be injected into the carburetor idle passage whereby such air-power-fluid mixes with and atomizes the fuel being admitted to the carburetor barrel.



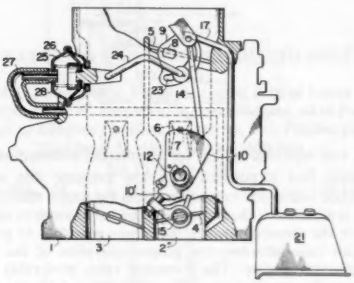
3,834,676
CARBURETOR
Toyoshige Miyazaki, Tokyo, Japan, assignor to Keihin Seiki Manufacturing Co., Ltd., Kanagawa-ken, Japan
Filed Aug. 23, 1971, Ser. No. 174,101
Claims priority, application Japan, Aug. 21, 1970, 45-73275
Int. Cl. F02m *17/04*
U.S. Cl. 261—36 A **6 Claims**



This invention relates to a fuel circulation type and floatless carburetor having an overflow chamber and fuel supply and discharge pumps located on opposite sides of the carburetor suction passage.

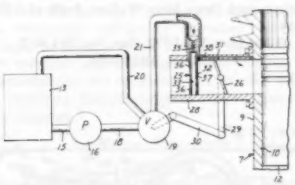
In order to provide an inclination insensitiveness, the carburetor fitted with a fuel-level forming and exposed fuel surface-maintaining chamber and a fuel return chamber cooperatably arranged with each other, is characterized by the provision of a suction side fuel pump leading hydraulically from a fuel supply source to the first chamber and a discharge side fuel pump leading from the second chamber back to said supply source, said pumps being of pulsative diaphragm type and positioned in close proximity to said bore and in a substantially opposed arrangement relative to each other and about said bore, said second pump having a substantially larger capacity than the first pump for the prevention of fuel leakage through an air vent passage.

3,834,677
AUTOMATIC CHOKE CONTROL
Yukio Hosho, Katsuta, Japan, assignor to Hatachi, Ltd., Tokyo, Japan
Continuation of Ser. No. 175,431, Aug. 27, 1971, abandoned. This application Dec. 12, 1973, Ser. No. 423,982
Claims priority, application Japan, Sept. 2, 1970, 45-76312
Int. Cl. F02m *1/10*
U.S. Cl. 261—39 B **10 Claims**



An automatic choke control for a carburetor in which the pivot of a bimetal for determining the degree of opening of a choke valve corresponding to the temperature of the engine is rotated in accordance with the variation in the running conditions of the engine at the time of cold starting, whereby the force for closing the choke valve is controlled in relation to the temperature of the engine.

3,834,678
FUEL INJECTION NOZZLE FOR INTERNAL COMBUSTION ENGINE
Ronald O. Baribeau, 112 N. Greeley, and Russell A. Baribeau, 317 E. Churchill, both of Stillwater, Minn. 55082
Continuation-in-part of Ser. No. 146,627, May 25, 1971, abandoned. This application Dec. 26, 1972, Ser. No. 318,376
Int. Cl. F02m *7/02*
U.S. Cl. 261—41 D **9 Claims**



A fuel injection nozzle for an internal combustion engine wherein the nozzle is disposed in the air intake passageway generally diametrically. The fuel is directed to the nozzle under pressure by a pump and metering valve. The nozzle has a central bore and transverse bores spaced along the length of the nozzle and at intervals from the wall of the intake manifold.

3,834,679

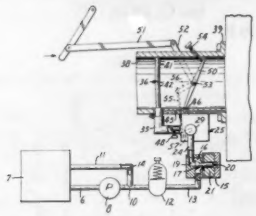
FUEL INJECTION SYSTEM FOR INTERNAL COMBUSTION ENGINE

Ronald O. Baribeau, 112 N. Greeley, and Russell A. Baribeau, 317 E. Churchill, both of Stillwater, Minn. 55082

Continuation-in-part of Ser. No. 318,376, Dec. 26, 1972, which is a continuation-in-part of Ser. No. 146,627, May 25, 1971, abandoned. This application Apr. 16, 1973, Ser. No. 351,480

Int. Cl. F02m *69/04*; F02d *3/02*

U.S. Cl. 261—41 D 9 Claims



A fuel injection system for an internal combustion engine wherein fuel is pumped at a low pressure into a nozzle disposed within and extending across the intake manifold. The fuel is metered at the metering valve in response to the opening of the throttle valve in the intake manifold to provide a fuel/air ratio affording the proper operation of the internal combustion engine. The metering valve preferably has an electrically operated shutoff valve operated by the ignition switch of an automobile to close the fuel line in advance of the metering valve when the engine is shut off to avoid a surge of fuel from the pump from entering the engine. The fuel is pumped to the metering valve by a suitable fuel pump which pumps the fuel through a pressure regulator into the fuel line leading to the metering valve. A port injector nozzle which extends across the inside cylindrical area of the manifold has a plurality of restricted bores positioned in spaced relation along the length of the generally cylindrical shaped nozzle. The air flow about the nozzle reduces the pressure on the downstream side of the nozzle drawing fuel from the nozzle and vaporizing the fuel. An idle passageway formed in the wall of the intake manifold opens into the intake manifold adjacent an edge of the throttle valve such that the fuel entering the engine during idle operation is also drawn from the idle passageway and atomized before it is carried into the engine intake manifold.

3,834,680

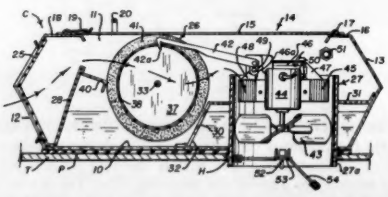
AIR CONDITIONING APPARATUS FOR A VEHICLE CAB

Howard S. Yost, 207 8th Ave., Greeley, Colo. 80631; Wesley Max Walker, and Dean Max Walker, both of 629, Casper, Wyo. 82644

Filed June 12, 1972, Ser. No. 261,962

Int. Cl. B01f *3/04*

U.S. Cl. 261—92 6 Claims



An air cooler and cleaner for a truck cab or the like formed as a comparatively flat, box-like unit adapted to be mounted upon the top of a truck cab. Air flowing into this cooler will move through a rotating, cylindrical filter and thence through a duct and into the vehicle cab. A reservoir is provided in the lower portion of the cooler through which the cylindrical filter moves to continuously wet and wash the fibers thereof.

3,834,681

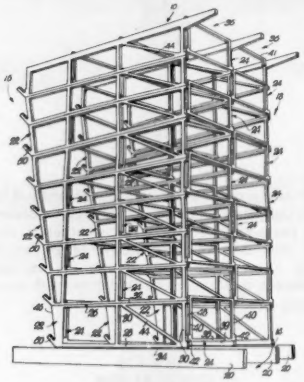
FIREPROOF, PREFAB FILL SUPPORT STRUCTURE FOR COOLING TOWER

Homer E. Fordyce, Kansas City, and Gerald D. Fritz, Raytown, both of Mo., assignors to The Marley Company, Mission, Kans.

Filed Aug. 17, 1972, Ser. No. 281,514

Int. Cl. B01f *3/04*

U.S. Cl. 261—111 18 Claims



Prefabricated, open-frame panel members of fireproof material such as concrete are stacked on edge to produce a number of side-by-side, multi-level uprights which, in turn, are laterally braced and interlocked into a rigid construction by prefabricated, open-frame bracing elements interposed between opposed panel members of each level of the uprights. The bracing elements of the structure are arranged in a number of parallel, diagonal series extending across the uprights with adjacent elements in each series being in partial juxtaposition with one another so that external forces applied to the structure are resisted by directing such forces diagonally into the ground along each series of cooperating elements. The sheer mass of the individual panel units and bracing elements contributes substantially to the structural rigidity of the completed structure, yet each unit and element may be readily hoisted into position by conventional industrial lifting equipment. Heat exchange fill suspended within the completed structure is disposed to receive water gravitating therethrough to cool the water as ambient air flows through the open structure to impinge upon the fill.

3,834,682

MIXING COLUMN FOR MEDICAL HUMIDIFIER AND METHOD OF HUMIDIFYING INHALABLE GASES

Charles J. McPhee, Sylmar, Calif., assignor to American Hospital Supply Corporation, Evanston, Ill.

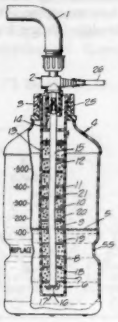
Filed June 19, 1972, Ser. No. 264,314

Int. Cl. B01f *3/04*; A61m *15/00*

U.S. Cl. 261—123 32 Claims

A multi-stage sieve plate humidifier column with a series of plastic snap together modular mixing units that combine to form an elongated vertical column with interconnected mixing chambers. The column is confined inside a liquid supply bottle where it is submerged in a liquid used to humidify an inhalable

gas such as oxygen or air. In a method of humidification, the gas is bubbled into a lower portion of the submerged column, transferred through the interconnecting chambers of the



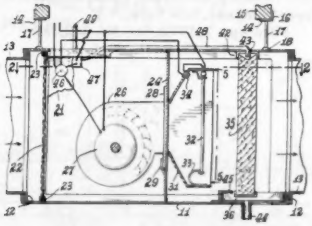
column where the bubbles are broken up and mixed with liquid, and then the humidified gas collected near a top of the column and conducted to a patient for inhalation.

3,834,683

POWER HUMIDIFIER

Charles M. McDuffee, 16 W. State St., North Aurora, Ill. 60542

Continuation of Ser. No. 40,133, May 25, 1970, abandoned.
This application Sept. 1, 1972, Ser. No. 285,615
Int. Cl. F28b *1/02*
U.S. Cl. 261—138 **6 Claims**



A power humidifier for permanent installation in a duct-defined path of air flow comprised of a housing having inlet and outlet ends and having therein, in the following sequence, a filter at the air inlet end, blower fans and a calrod heater arranged to heat air after it leaves the blowers and prior to its entrance into and through an air-pervious evaporator pad over and through which cold water is continuously flowed, for humidifying the stream of air passing therethrough. The side edges of the evaporator pad are spaced from the side walls of the housing to allow a minimum quantity of air to by-pass the evaporator pad.

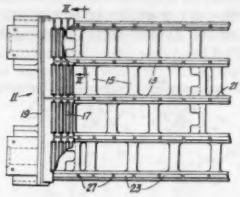
3,834,684

SINTER PALLET

Kurt Reinfeld, Pittsburgh, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Filed May 4, 1973, Ser. No. 357,364
Int. Cl. F27b *2/02*
U.S. Cl. 266—21 **5 Claims**

A plurality of short cover bars are attached to the top surface of the ribs of a sinter pallet by means of a two-inch diameter boss at the center of each cover bar that is plug welded to a



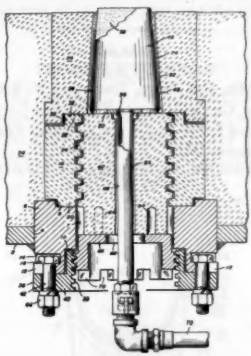
rib; the remainder of each cover bar is spaced apart from the pallet rib.

3,834,685

APPARATUS FOR INJECTING FLUIDS INTO MOLTEN METALS

Leonard P. Ziemkiewicz; Victor P. Ardito, both of Lower Burrell, and James W. Torrence, Natrona Heights, all of Pa., assignors to Allegheny Ludlum Industries, Inc., Pittsburgh, Pa.

Filed Sept. 24, 1973, Ser. No. 400,089
Int. Cl. C21c *5/48*
U.S. Cl. 266—41 **10 Claims**



Fluids, particularly gases are injected into a molten metal container through an injector head having a tapered outer surface. An opening is formed through the refractory lining of the container by means of an inner refractory member having an opening therein tapering axially inwardly toward the inside of the lining so as to receive the injector head, and an outer refractory member having a female threaded opening therein. A male threaded refractory member having a hole therethrough for passage of the fluid is threaded into the outer refractory member and bears against the injector head. A nut may be attached to the container shell and a male threaded member threaded therethrough to bear against the outer refractory member.

3,834,686

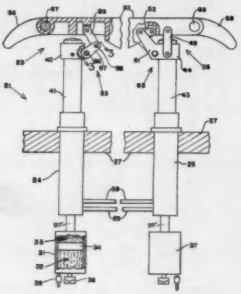
HYDRAULIC IMPACT ABSORBING BUMPER

Hans C. Moritz, Sunland, and Robert Schwarz, Santa Barbara, both of Calif., assignors to The United States of America as represented by the Secretary of the Department of Transportation, Washington, D.C.

Filed Oct. 24, 1972, Ser. No. 300,250
Int. Cl. B60r *19/06*; B61f *19/04*; F16f *9/16*
U.S. Cl. 267—116 **16 Claims**

Disclosed is a hydraulic energy absorbing bumper system for vehicles that includes a bumper with two variable stroke

hydraulic buffers affixed to the ends. Both the stroke and the resistance of the buffers vary in response to the impact received by the bumper, however the resistance presented by either buffer during any given stroke is constant throughout the length of the stroke. Torsion hinges coupling the buffers to



the bumper allow the buffers to stroke unevenly during oblique impact yet remain parallel. The bumpers are hydraulically interconnected so that the total energy absorbed during uneven stroking in response to the oblique impact is the same as the total energy absorbed during a normal impact of the same velocity.

3,834,687

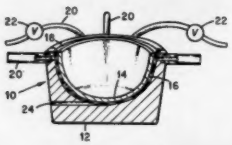
WORKPIECE SUPPORT

James A. Martin, Oak Ridge, Tenn., and W. Reneau Dubberley, Decatur, Ga., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Jan. 16, 1973, Ser. No. 324,016

Int. Cl. B23g *3/00*

U.S. Cl. 269—7 **2 Claims**



This invention pertains to a method and fixture for supporting a workpiece in a machine tool for machining purposes. The fixture comprises a machine-chuck receiving base with a projection thereon or cavity therein of a configuration generally conforming to at least a portion of an internal or external surface of the workpiece. The workpiece is positioned in a contiguous nesting relationship with the projection or cavity and a workpiece retaining liner is disposed between the internal or external surface of the workpiece and the base. The liner is formed in place and consists of a low-shrinkage elastomeric material that has been cured in place at approximately room temperature.

3,834,688

KEY VISE STRUCTURE

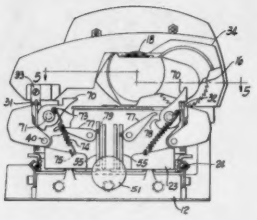
Robert H. Richens, Macedonia, and Charles A. Garner, Strongsville, both of Ohio, assignors to Cole National Corporation, Cleveland, Ohio

Filed Nov. 20, 1972, Ser. No. 308,285

Int. Cl. B23c *1/16*; **B25b** *1/08*

U.S. Cl. 269—42 **17 Claims**

A key vise structure is disclosed wherein first and second vises are mounted on opposite ends of the frame and a movable vise jaw in each vise is moved by an end of a beam spring. The central portion of the beam spring is moved toward the vise jaws by means of a mechanical advantage means, shown in the preferred embodiment as a manual handle and a toggle mechanism. This simultaneously clamps both vises closed upon keys for use in a key machine. The key vise structure is also provided with a shoulder gauge for the key with a spring



acting to yieldably urge the shoulder gauge into each of a gauging and a retracted position and this shoulder gauge is retracted by linkage means as the vises are moved to the clamped position. The foregoing abstract is merely a resume of one general application, is not a complete discussion of all principles of operation or applications, and is not to be construed as a limitation on the scope of the claimed subject matter.

3,834,689

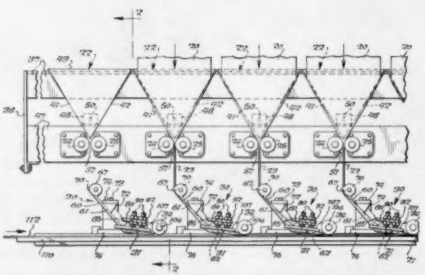
WEB FOLDING APPARATUS

Charles A. Lee; Warren R. Furbeck, both of Knoxville, Tenn., and Horace N. Kemp, Camarillo, Calif., assignors to International Paper Company, New York, N.Y.

Filed Apr. 7, 1972, Ser. No. 242,189

Int. Cl. B41l *43/04*

U.S. Cl. 270—41 **6 Claims**



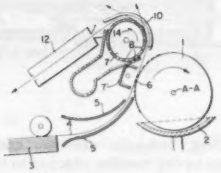
A machine for producing V-folds and then C-folds in each of a plurality of webs and for advancing the webs in a continuously moving stack. The V-folds are formed by directing the webs over generally triangular folding elements, while the C-folds are formed by advancing the V-folded webs along folding elements which are each provided with a pair of folding fingers of rectangular cross-section. The folding fingers have inwardly directed folding surfaces which converge in the direction of movement of the webs and engage separate longitudinal portions of the webs to produce the C-fold.

3,834,690

DEVICE FOR SEPARATING COPY CARRIERS FROM A ROLL, DRUM OR THE LIKE BY MEANS OF A SUCTION ROLL

Wilhelm Knechtel, Biebertal, Germany, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed July 13, 1972, Ser. No. 271,510
Claims priority, application Germany, July 20, 1971, 2136139
Int. Cl. B65h 29/20, 29/52
U.S. Cl. 271—80 3 Claims



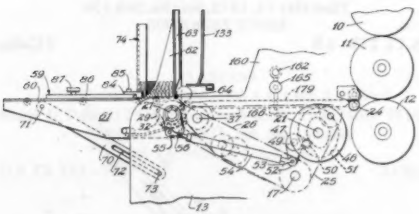
A device for separating copy carriers such as copy paper sheets from a roll, drum or the like by means of a suction roll includes a wire, rod or like member extending obliquely in front of the suction roll. The wire, rod or like member is arranged so that when a copy carrier is fed forwardly its leading edge reaches the wire for point-contact therewith and as the copy carrier is further moved the point of contact is displaced along the leading edge of the copy carrier and along the wire, whereby the copy carrier is curved toward the suction roll by the wire.

3,834,691

PRINTING PRESS FEED MECHANISM

Harold E. Paulson, 5369 Vernon Lake Dr., Dunwoody, Ga.

Filed June 23, 1972, Ser. No. 265,546
Int. Cl. B65h 3/10, 3/44, 5/16
U.S. Cl. 271—100 11 Claims



A printing press feed mechanism is provided which includes a suction feed device and a tiltable feed table capable of supporting envelopes, sheets and the like at an adjustable angle relative to the feed device to compensate for envelopes of various degrees of stiffness. An auxiliary feed hopper is provided for feeding smaller and more flexible envelopes and the like. An auxiliary suction feed device engages the front surface of the envelope to be printed, and inverts it so that the front surface is uppermost in conveying it to the printing press.

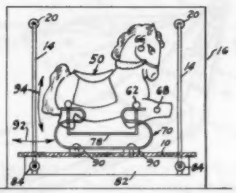
3,834,692

RIDING RECREATIONAL TOY SPRING-MOUNTED ON A SWINGING PLATFORM

James R. Meade, 51 Byberry Ave., Hatboro, Pa. 19040

Filed June 22, 1973, Ser. No. 372,678
Int. Cl. A63g 9/10, 9/16
U.S. Cl. 272—52.5 9 Claims

A child's toy which includes supporting structure for simulated bodies resembling animals, autos, aeroplanes and the like which may either be provided with seats extending between opposite simulated sides of the body, or a saddle upon the back of a simulated hose or pony, the body being supported by spring means which will permit tilting, swivelling or pivoting vertical bouncing movement. To further enhance the potential movement of the simulated body, one or more of the same are supported upon a platform suspended between a pair of transversely spaced upright members by means of elongated members extending downwardly from the upper portions of said upright members for purposes of additionally providing swinging or gliding movement of said platform and simulated body thereon back and forth, substantially within horizontal planes to obtain linear travel as well as a rock and swivel bounce in a vertical plane, perpendicular to the horizontal. Power means are also provided to effect such swinging movement of said platform and the animal body, if desired.

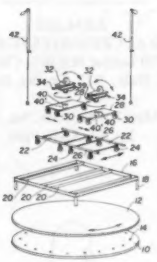


3,834,693

SKI INSTRUCTION APPARATUS

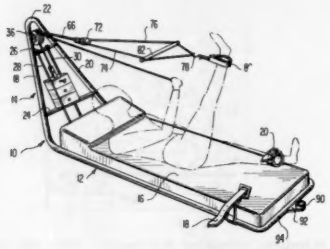
Leopold H. Poppenberger, Toronto, Ontario, Canada, assignor to The Raymond Lee Organization, Inc., New York, N.Y.

Filed Oct. 27, 1972, Ser. No. 301,452
Int. Cl. A63b 69/18, 23/04
U.S. Cl. 272—57 B 2 Claims



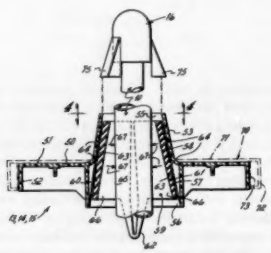
Apparatus used in ski instruction comprising: a pair of spaced horizontal platforms movable back and forth along a given direction in a horizontal plane; a pair of ski boot simulating devices; and a pair of rotatable and vertically movable hinges, each of the ski boot simulating devices being secured by a corresponding hinge to a corresponding platform. The instruction device includes structure whereby each ski boot simulating device is capable of pivoting or rocking from side to side with respect to a vertical axis, and may rotate and move vertically to a limited extent due to the provision of the rotatable and vertically movable hinges by the structure of which the ski boot simulating devices are mounted on their respective platforms. The ski instruction device of the present invention is so constructed and operable as to permit the person undergoing instruction thereon to attain and partake of all of the various movements normally encountered during actual skiing operations.

3,834,694
LEG MUSCLE EXERCISE APPARATUS
Robert H. Pridgen, 1714 Summit Pl., N.W., Washington, D.C. 20009
Filed Sept. 11, 1973, Ser. No. 396,335
Int. Cl. A63b 21/06, 21/10
U.S. Cl. 272—58 8 Claims



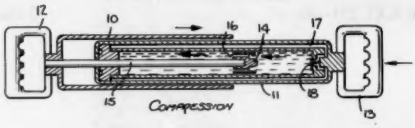
An apparatus for exercising the thigh, hamstring, and groin muscles, including structure for applying a predetermined weight to the upwardly extending leg to thereby stretch the hamstring and thigh muscles of a person lying on his back. The weights are attached to the person's upwardly extending ankle by use of a cord and pulley system, and a one-way clutch enables the lifting of the weights by use of a cord with the hands and arms, then transferring the force of the weights to the leg to be exercised, thereby relieving the arms of the task of applying the force to the leg. A pair of pads are resiliently retained in laterally spaced relation so that a person using the device may position the pads between his knees and force them together against the resilient force to exercise his leg and groin muscles. A lazy tong device connected to the resilient arms has a curved plate adapted to engage the user's abdomen to enable the user to apply greater resistance to movement of the pads, as desired.

3,834,695
MOUNTING AND ACCESSORIES FOR FLEXIBLE POLE
Robert Boggild, 8770 Indian Hill Rd., Cincinnati, Ohio 45243, and William L. Dale, 822 Corine Ln., Cincinnati, Ohio 45218
Filed May 7, 1973, Ser. No. 357,667
Int. Cl. A63b 9/00
U.S. Cl. 272—60 A 5 Claims



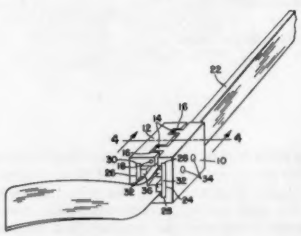
A flexible pole, preferably of fiberglass is removably mounted in a socket by elastomeric spaced bushings. One or more steps are removably positioned on the pole by means of a self-locking tapered clamp. The top of the pole has an elastomeric fitting having one or more flexible fingers which prevent a step from inadvertently flying off the pole.

3,834,696
DOUBLE-ACTING HYDRAULIC EXERCISER
Donald Spector, Union City, N.J., assignor to Sam Rubin, New York, N.Y.
Filed May 16, 1973, Ser. No. 360,686
Int. Cl. A63b 23/02
U.S. Cl. 272—79 C 4 Claims



A double-acting, hydraulic exerciser composed of two telescoping tubes having handles attached to the ends thereof. The inner tube defines a chamber which is oil-filled and encloses a piston whose actuating rod is attached to the handle end of the outer tube. The piston divides the chamber into right and left sections and is provided with valves that function alternately to allow oil to pass from the right section to the left section when the tubes are brought together by the handles in a compression stroke, and to allow oil to pass from the left section to the right section when the tubes are pulled apart in an expansion stroke. Because of the incompressibility of the oil, the motion in the compression and expansion strokes is linear and affords uniform resistance to motion throughout the entire length of each stroke, so that the exercising effect is even and free of strain in both traction and expansion.

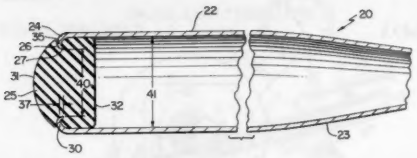
3,834,697
REMOVABLE WEIGHT FOR PRACTICING WITH ATHLETIC IMPLEMENTS
John J. McNamara, Jr., 2 Couch St., South Norwalk, Conn. 06854, and William Baum, 47 School St., Northboro, Mass. 01532
Filed May 14, 1973, Ser. No. 360,130
Int. Cl. A63b 67/00
U.S. Cl. 273—1 B 4 Claims



A practice device or assistor comprising a weight for quick attachment to and detachment from an athletic implement for practicing with the weight in place and playing the game with the same implement with the weight removed the weight comprises a box or cube-shaped member constructed from two similar (in reverse) halves hingedly connected together on one side edge and being provided with a latch member on the opposite side edge, each half being provided with similar undercut recesses for detachably receiving additional weights. Placed between the additional weights and an implement to be weighted are elastometric bars or strips to prevent sliding of the weights along the implement during use and to prevent

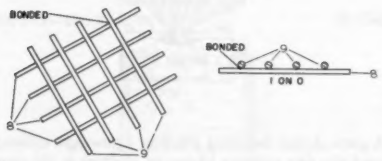
marring of the implement when the latch is closed for holding the weight on the implement.

3,834,698
BALL BAT
Albert M. Pouzou, Richmond, Va.
Filed Aug. 25, 1971, Ser. No. 174,588
Int. Cl. A63b *59/06*
U.S. Cl. 273—72 A **3 Claims**



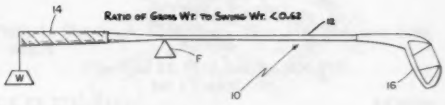
A ball bat is provided wherein the bat comprises a tubular metallic body having a handle end portion and a hitting end portion. The hitting end portion has an annular flange defining its terminal end and the flange has a radially inwardly directed portion and an integral hooking end which hooks toward the handle end portion with the radially inwardly directed portion and hooking end each having a thickness which decreases substantially gradually from the hitting end portion to the terminal edge of the hooking end. The bat is provided with an end plug which has an annular groove therein corresponding in configuration to the flange and has such flange received therewithin. The plug has a flange-engaging surface which defines one wall of the groove and engages the inside surface of the flange to thereby hold the end plug in position even after extended use of the bat.

3,834,699
METHOD OF STRINGING A GAME RACKET
Roger D. Pass, 1119 W. Montana Ave., St. Paul, Minn. 55108
Filed June 23, 1971, Ser. No. 155,830
Int. Cl. A63b *51/02, 51/08*
U.S. Cl. 273—73 D **2 Claims**



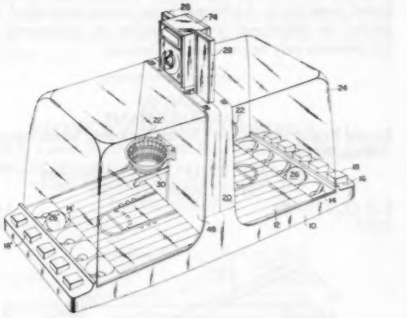
In tennis rackets and the like a faster and more efficient method of stringing racket frames wherein the strings are inserted and tensioned within the frame without interweaving the longitudinal and latitudinal strings. The net thus formed is than consolidated into a unified structure by bonding the longitudinal strings to the latitudinal strings at each point that the longitudinal strings cross the latitudinal strings.

3,834,700
METHOD OF MAKING A GOLF CLUB WHEREIN RATIO OF GROSS WEIGHT TO SWING WEIGHT IS LESS THAN 0.62
Benjamin L. Averbach, 45 Orchard St., Belmont, Mass. 02178
Filed Dec. 24, 1968, Ser. No. 786,627
Int. Cl. A63b *53/00*
U.S. Cl. 273—77 R **1 Claim**



The golf club having a ratio of gross weight to swing weight that is less than 0.62 and a head including an insert having a modulus of elasticity greater than six thousand p.s.i. defining the club's striking surface.

3,834,701
BASKETBALL GAME AMUSEMENT DEVICE
Kazuyuki Hashimoto, Ohana-Jaya 3-8-20 Katsushika-ku, Tokyo, Japan
Filed Nov. 9, 1973, Ser. No. 414,515
Claims priority, application Japan, July 7, 1973, 48-80877
Int. Cl. A63f *7/06*
U.S. Cl. 273—85 C **6 Claims**



A basketball game amusement device featuring a housing, a wall positioned at the center of the housing and extending upwardly therefrom, basket goals mounted on opposite sides of the wall and above the top surface of the housing, a transparent dome secured to said housing so as to define two separate playing areas on opposite sides of the wall, a plurality of supporting surfaces positioned in a row extending across the housing at positions near the ends thereof and within the dome, actuating members positioned within the supporting surfaces for propelling a ball located therein, a plurality of operating members extending across the opposite ends of the housing located outside of the dome and corresponding to the supporting surfaces such that as an individual operating member is depressed, its corresponding actuating member propels a ball located within its supporting surface towards its basket goal and a system associated with each of the basket goals for counting the number of times a ball passes therethrough.

3,834,702
JOGGING GAME APPARATUS

William W. Bliss, 8422 Melrose Pl., Los Angeles, Calif. 90069

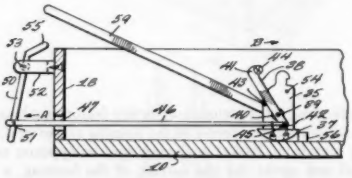
Filed June 11, 1973, Ser. No. 368,744
Int. Cl. A63f 9/14; A63b 23/04
U.S. Cl. 273—86 B 5 Claims

Game apparatus is provided which is controlled by a person jogging in place to establish a simulated race between the jogger and a simulated competitive runner. The apparatus includes a game board and two or more game pieces. The game pieces represent runners. They are controlled to move around a racetrack inscribed on the surface of the game board. One of the game pieces is controlled by a timing mechanism, which is pre-set to cause the game piece to move at a particular speed so as to complete the race in a predetermined time. Another of the game pieces is controlled by the jogger, who must jog in place at a particular rate in order to win the race with the timed game piece. Additional game pieces controlled, for example, by additional joggers and/or by additional timing mechanisms may be provided, as desired.

3,834,703
BASEBALL GAME

Gerald Ernest Dlouhy, 567 Smith Neck Rd., South Dartmouth, Mass. 02748

Filed Mar. 27, 1973, Ser. No. 345,466
Int. Cl. A63f 7/10, 7/06
U.S. Cl. 273—89 3 Claims

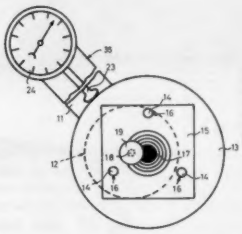


A baseball game is provided with a gameboard having vertical walls perpendicular thereto to indicate an outfield wall. The infield and outfield positions are provided with net-like devices to catch and retain a hit ball. A net-like catching device is provided which has a fixed strike zone and retains a pitched ball within the catching device which has passed through the fixed strike zone. A batter is provided which has a lower stationary portion and an upper rotating portion attached to the lower stationary portion so that a bat is rotated through an arcuate swing wherein the bat is parallel to the gameboard at least during a portion of the total arcuate swing. A pitching device is provided which enables the operator to control the direction, trajectory and speed of the pitched ball.

3,834,704
TARGET WITH EVALUATING HOLES

Heinz Krausser, and Alfred Krausser, both of Munich, Germany, assignors to Carl Edelmann GmbH, Heidenheim/Brenz, Germany

Division of Ser. No. 15,079, Feb. 27, 1970, Pat. No. 3,719,998. This application Feb. 7, 1973, Ser. No. 330,239
Claims priority, application Germany, Feb. 28, 1969, 1910345
Int. Cl. F41j 3/00
U.S. Cl. 273—102 R 1 Claim



A target for use with apparatus for the exact evaluation of hits on a shooting target including a rotatably mounted holding plate for an annular support disc concentrically holding the target. A plug, which can be inserted into the shot hole, is mounted in a central bore of the holding plate and forms the axis of rotation of the support disc and the target. A measuring device is provided whose sensor contacts the circumference of the support disc to show the eccentricity of the shot hole. The article of a bull's-eye target is provided having positioning holes punched therein. The holes are disposed at a uniform distance from the center of the bull's-eye in order to assure that the center of the bull's-eye coincides with the center of the supporting disc. This permits exact evaluation of hits when the target is placed back on the disc after shooting.

3,834,705
FOOTSIE BIRD GAME DEVICE

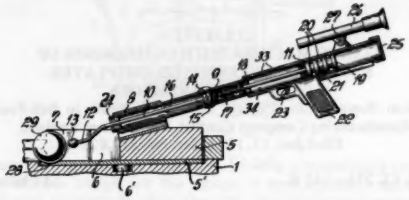
Raymond Woo Wong, 900 Richard Ln., Danville, Calif. 94526

Filed Sept. 26, 1973, Ser. No. 401,069
Int. Cl. A63b 67/18
U.S. Cl. 273—106 A 3 Claims

A game device including a hollow lightweight cylindrically shaped disc like member having an aperture in the center of the top surface thereof and extending axially therethrough into an interior compartment in the disc member, and a set of a plurality of feathers each having their shaft portions connected together and extending through the center of a flat washer-like member fabricated of a flexible material, the feathers being joined to the disc member by the washer-like member and joined feather shafts being forced axially through the top surface opening into the disc compartment with the washer being retained within the compartment and with the feathers projecting upwardly and radially outwardly from the

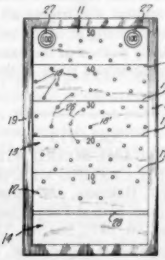
disc top surface the disc intended to be kicked vertically repeatedly with an individual's feet to retain the disc in the air for the longest period of time thus facilitating an individual's development of coordination along with providing exercise to the muscles of the individual's legs.

3,834,706
POCKET BILLIARD GAME APPARATUS
Xaver Leonhart, 8381 Harburg b., Pilsting/Ndb., Germany
Filed June 22, 1973, Ser. No. 372,620
Claims priority, application Germany, July 8, 1972, 2233649
Int. Cl. A63d *15/00, 15/04*
U.S. Cl. 273—122 R **9 Claims**



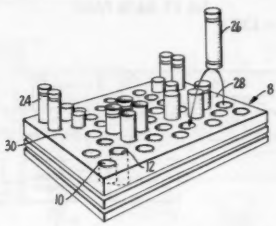
A spring projector assembly is connected on a turntable mounted at one end of the playing surface of a pocket billiard table, the turntable being rotatable about a vertical axis and the spring projector mounted inclined toward the playing surface and rotatable about its longitudinal axis relative to the turntable. The spring projector includes a hollow tubular body with a spring-loaded piston therein, the piston head having a plurality of annular grooves on its surface selectively engaging with a trigger release mechanism for selective loading of the piston spring. The piston rod protrudes from the end of the hollow tubular body adjacent the playing surface and the protruding end portion is offset from the axis of the piston rod and terminates in a cue ball engaging tip rearwardly of a ball holding impression disposed within a slot in the turntable. The portion of the tubular body in which the piston head is disposed comprises a compression chamber having plural holes through the sidewall thereof, the selective covering of which impedes the forward thrust of the piston rod ball projector upon release of the spring-loaded piston by the trigger.

3,834,707
MAGNETIC GAME
Ralph H. Birkett, 1030 4th Ave., Montreal 204, Quebec, Canada
Filed Jan. 7, 1974, Ser. No. 431,203
Int. Cl. A63f *3/00*
U.S. Cl. 273—126 A **10 Claims**



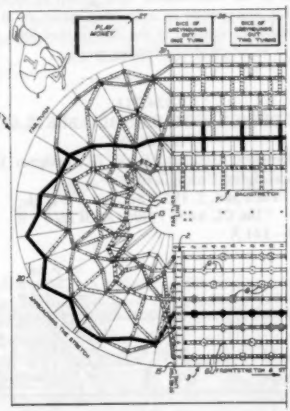
A magnetic game comprising a board of non-magnetic material having a flat upper surface. A plurality of spaced apart pins of ferrous material are secured to the board and protrude above the upper surface of the board. A first and second magnetic disc each having a known polar disposition whereby said discs will repel each other when brought in close proximity to each other. Pusher means are provided for restraining and moving one of the discs on the board upper surface whereby to cause the other disc to be repelled and displaced on the flat surface.

3,834,708
CLUSTER GAME
Philip L. Shoptaugh, 5860 Buena Vista Ave., Oakland, Calif. 94619
Filed Feb. 23, 1973, Ser. No. 334,996
Int. Cl. A63f *3/00*
U.S. Cl. 273—132 **4 Claims**



A board game is provided wherein the board has holes for the reception of pegs or playing pieces, the holes being of different depths and the pegs being of different lengths whereby the players in a series of moves attempt to get their pieces in a tight cluster with the pieces extending the same height above the board. In its simplest form, holes of two different depths and pegs of two different lengths are provided so that it is necessary for the player to have all of his long pegs in the deep holes and all of his short pegs in the shallow holes, forming a tight cluster to win.

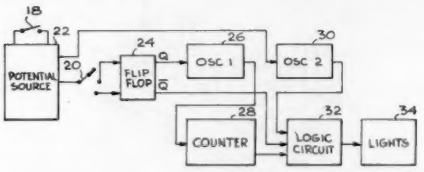
3,834,709
RACING BOARD GAME APPARATUS
Kenneth E. Lamb, St. Petersburg, Fla., assignor to The Professor Inc., St. Petersburg, Fla.
Filed Aug. 22, 1972, Ser. No. 282,783
Int. Cl. A63f *3/00*
U.S. Cl. 273—134 AD **7 Claims**



A racing game includes a playing board with endless paths having successive stations along which corresponding tokens

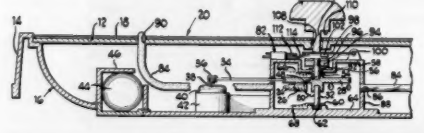
are moved as indicated by dice. The paths are irregular and intersect at certain areas of the board to form terminal junction points which permit one player's tokens to bump, block or pass another depending upon the dice and other factors. Passing symbols, racing odds, starting lines and other instructions are included with individual programs that can be distributed to each player and correlated with the game board. Each player can use play money and betting slips to participate in a variety of games that are instructive as to the varying probabilities found in actual dog or horse racing.

3,834,710
ELECTRONIC RANDOM PREDICTOR
Andre Levy Sousan, Avenue De Suffren 20, Paris, France (75015)
Filed June 4, 1973, Ser. No. 366,656
Int. Cl. A63b 71/06
U.S. Cl. 273—138 A **7 Claims**



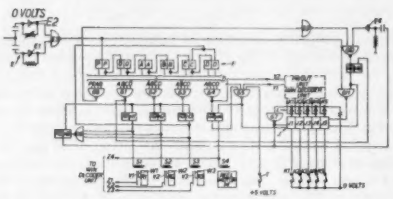
A random predictor electronic system has groups of lights with each group having at least two differently colored light sources. A logic circuit has its output connected to the groups of lights. A first oscillator controls a binary stage electronic counter with the output of the counter being one input of the logic circuit. A second oscillator powered by a source of electric potential has its output being a second input of the logic circuit. A player actuated manually positionable switch is connected to the potential source and to a flip-flop with the switch in a first position triggering one side of the flip-flop and in a second position triggering the second side of the flip-flop. The output of the first side of the flip-flop controls the first oscillator and the output of the second side of the flip-flop being a third input of the logic circuit, whereby on positioning the switch in the first position the first oscillator drives the counter and the plurality of groups of lights are not illuminated and on positioning the switch in the second position at least one of the light groups is illuminated wherein at least one of the colored light sources in the illuminated light group is illuminated in either a steady state mode or a flashing mode, or at least two of the colored light sources in the illuminated light group are illuminated in an alternating blinking mode.

3,834,711
GAME DEVICE WITH ILLUMINABLE PLAYING POSITIONS
Jeffrey D. Breslow, Highland Park, Ill., assignor to Marvin Glass & Associates, Chicago, Ill.
Filed Jan. 2, 1973, Ser. No. 319,191
Int. Cl. A63b 71/06; A63f 1/18
U.S. Cl. 273—141 A **8 Claims**



A game device which includes a game board having a playing area on which a plurality of playing positions are arranged in a generally circular pattern. A miniature light-bulb is mounted for rotation beneath the playing area and a plurality of light transmitting spoke-like rod members are mounted beneath the playing area for directing light rays from the bulb along the lengths of the rods outwardly from the bulb. The inner ends of the rods are disposed adjacent the lightbulb and the outer ends of the rods are bent upwardly and comprise indicating means at the playing positions on the playing area. The lightbulb is rotated by a battery powered motor mounted beneath the playing area and a brake mechanism is employed for selective manual operation by players of the game to bring the lightbulb to a halt at a random position to provide a chance selection of one of the playing positions by directing light rays along one of the spoke-like rods to indicate the selected position.

3,834,712
GAMING MACHINE WITH COMPARISON OF RANDOMLY DETERMINED AND PLAYER PRESELECTED SYMBOLS
Calvin Howard Cox, Pudsey, England, assignor to Bell-Fruit Manufacturing Company Limited, Nottingham, England
Filed Jan. 11, 1972, Ser. No. 217,022
Int. Cl. A43f 5/04
U.S. Cl. 273—143 R **13 Claims**

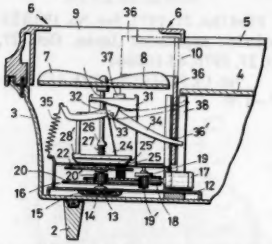


A gaming machine which is operated by a player when he manually actuates one of a plurality of switches each bearing a different symbol to activate the machine. The machine presents a display of various symbols, inclusive of those of the switches, which on each play of the machine changes the displayed symbols in a random manner to give a new display. Correspondence between the symbol of the manually activated switch and the same randomly displayed symbol results in a win signal in a win decoder with the win signal increasing depending upon the total number of correspondences therebetween. In addition, there is a different win signal if all the displayed symbols are the same, even though they do not correspond to the symbol of the pushed switch. Prize awarding means responsive to the win decoder awards numerical totals corresponding to the win signals. While normally only one switch is actuated and each switch controls its own triggering of a different stage of a shift register, a clock mechanism connected to the shift register will trigger all the stages thereof which is equivalent to pressing all of the switches if any one of the switches is manually pushed at the exact time as that corresponding to a predetermined stage of the counting state of the clock mechanism.

3,834,713
AMUSEMENT AND GAME BOARD WITH AUTOMATIC DICE CASTING MEANS
Yoshie Ito, No. 4-12-2, Hakusan, and Kataro Suda, No. 4-40-15, Higashi Mukojima, both of Tokyo, Japan
Filed Jan. 10, 1973, Ser. No. 322,424
Claims priority, application Japan, Mar. 7, 1972, 47-22752
Int. Cl. A63f 9/04
U.S. Cl. 273—145 E **2 Claims**

An amusement and game board specifically incorporating an automatic dice shaking and casting device comprising in

combination a dice shaking and casting section disposed with the head portion thereof to be exposed in one corner of the playing surface of the game board, wherein the dice casting section has an opening on the upper side thereof and also on one lateral side thereof facing the playing surface and a rotary disc disposed in the interior of that section to be driven by an electric motor in such a manner that it can start rotation in immediate response to the presence of a set of dice thrown

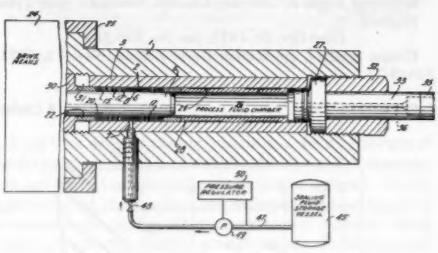


thereupon by a switch adapted to serve to automatically close an electric circuit for the motor, a cam operated shutter adapted to normally close the side opening is appropriately correlated with the rotating motion of the motor so as to automatically open the side opening of the dice casting section and close it again, and another switch adapted to serve to automatically maintain the electric circuit for one complete operation and then open the electric circuit, thereby to accomplish the complete dice operation of the game board.

3,834,714
PRACTICE GOLF CLUB
Richard C. Smolinski, 72 Mar Vista Dr., Monterey, Calif. 93940
Filed Mar. 5, 1973, Ser. No. 338,180
Int. Cl. A63b *69/36*
U.S. Cl. 273—183 D **7 Claims**

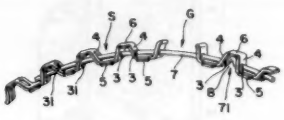
The training and practice golf club of the present invention is directed to the attainment of the proper feel of the grip for a golf swing or stroke, other than on a putting surface. This feel is obtained by dividing the club's normal grip means transversely into two parts. The upper portion is immovably secured to the upper end of the shaft in the usual manner. The lower portion of the grip means is secured to a fitted and freely rotating sleeve which is slipped over the club shaft and moved upwardly until the two grip portions abutt. A portion of the sleeve extends beyond and below the terminus of the lower grip means. A coiled spring is slipped over the sleeve portion and spaced from, but adjacent to, the terminus of the lower grip means. One end of the coiled spring is bent inwardly at right angles and restrained in a hole bored in the sleeve just below the lower grip means. The projecting end of the spring rides in a transverse slot to provide limited rotation. The lower end of the spring is also bent inwardly at right angles and rides in a registering transverse slot in the sleeve and its projecting end is restrained in a hole bored in the main shaft. In this manner the lower portion of the grip means may be rotated against the tension of the coil spring to provide the feel in properly gripping a golf club. Unless the tension by rotation is felt, the proper grip is not attained.

3,834,715
PRESSURE SEAL ASSEMBLY
Albert O. Butler, Odessa, Tex., assignor to Dart Industries Inc., Los Angeles, Calif.
Filed Apr. 26, 1972, Ser. No. 249,442
Int. Cl. F16j *15/40*
U.S. Cl. 277—1 **7 Claims**



An improved pressure seal assembly is provided having an increased life span which comprises a lantern ring having an inlet to receive a sealing fluid and at least one outlet through which the sealing fluid passes, sealing fluid means in fluid communication with the inlet and outlet in the lantern ring for supplying a sealing fluid therethrough, and at least one chevron type packing ring located on each side of the lantern ring and having its convex surface thereof facing away from the lantern ring.

3,834,716
SPACER EXPANDER WITH GUIDE ROD FOR PREVENTING OVERLAPPING OF THE ENDS OF THE SPACER EXPANDER
Syoji Okada, Ohmiya, Japan, assignor to Nippon Piston Ring Co., Ltd., Tokyo, Japan
Filed Aug. 1, 1973, Ser. No. 384,539
Claims priority, application Japan, Aug. 2, 1972, 47-90392
Int. Cl. F16j *9/06, 9/18*
U.S. Cl. 277—9 **2 Claims**



Herein disclosed is a radially undulating spacer expander structure for use in a combined oil scraper piston ring together with an arcuate guide rod. The spacer expander has its two ends formed into an abutting portion and has one of its undulations composed of a crest portion, a trough portion and two connecting portions connecting the crest portion and the trough portion. A plurality of those of the undulations, which are positioned in the vicinity of the two ends, are formed at the connecting portions with bores which are positioned close to either of the crest portion or the trough portion. A plurality of

those of the undulations, which are positioned at one side of the two ends, are formed at the connecting portions with slots which are positioned adjacent to the bores. The spacer expander further includes an arcuate guide rod which is received in both of the bores and the slots. According to one feature of the present invention, the guide rod has its one end folded or formed into a trapezoid space, which is defined by the connecting portion of one of the undulations and by either of the crest portion and the trough portion of the same, so as to have the one end portion retained at its folded or formed portion in the trapezoid space, so that the two ends of the spacer expander can be made free from any overlapping even when the two ends are made to approach to each other.

3,834,717

SHAFT SEALS

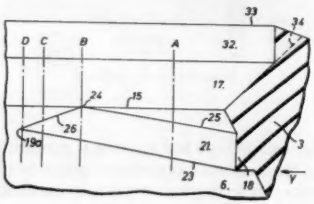
Frank Alfred Broad, Newcastle upon Tyne, England, assignor to George Angus & Company Limited, Newcastle upon Tyne, England

Filed Oct. 20, 1972, Ser. No. 299,389

Claims priority, application Great Britain, Nov. 12, 1971, 52648/71

Int. Cl. F16j *15/54*

U.S. Cl. 277—134 **4 Claims**



A positive action shaft seal with a moulded sealing edge has an improved configuration of positive action ridges meeting the sealing edge so that the ridge crests merge into the air side face and only ridge flanks meet the sealing edge.

3,834,718

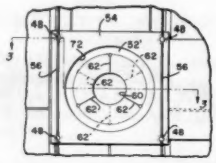
SEALING MEANS

Laszlo Gyongyosi, Clarksburg, and David A. Gregory, Lost Creek, both of W. Va., assignors to Ingersall-Rand Company, Woodcliff Lake, N.J.

Division of Ser. No. 322,686, Feb. 15, 1973, Pat. No. 3,800,890. This application Nov. 5, 1973, Ser. No. 412,741

Int. Cl. F16j *9/06*

U.S. Cl. 277—166 **4 Claims**



The system comprises an enclosure for enveloping a portion of drill rod used with an earth drilling machine the enclosure having only one side opening formed therein for coupling to a source of suction. The enclosure has axially aligned holes formed in the top and bottom thereof for admitting drill rod therethrough for address to the earth; and at least one "-floating" type seal disposed about the drill rod for tracking radial excursions of the drill rod during drilling. A baffle plate fixed to the enclosure prevents the travel of large earth cuttings to the source of suction. Further, a flexible hood is carried about the enclosure, and is movably mounted for elevation from the ground area and for lowering thereto to prevent an escape of earth cuttings dust.

3,834,719

PISTON HEAD ASSEMBLY HAVING AN L-SHAPED PISTON RING

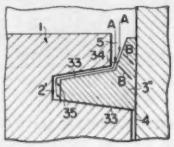
Keichiro Shin, Ageo, and Mikio Miyamoto, Ohmiya, both of Japan, assignors to Nippon Piston Ring Co., Ltd., Tokyo, Japan

Filed Oct. 27, 1971, Ser. No. 193,123

Claims priority, application Japan, Oct. 27, 1970, 45-106043; Oct. 27, 1970, 45-106044

Int. Cl. F16j *9/20;* **F01b** *31/10*

U.S. Cl. 277—170 **3 Claims**



A piston head assembly having an annular groove carries a substantially L-shaped cross-sectional ring. One side of the ring has a wear surface, while the other faces of the ring are slanted to provide gas access to the rear of the ring. The annular groove has matching faces whereby sticking and excessive wear is reduced.

3,834,720

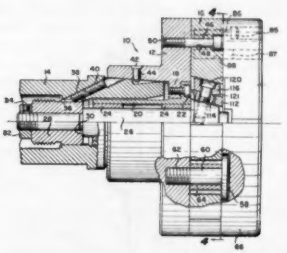
SELF-CENTERING JAW CHUCK

Hubert J. Parsons, Horseheads, N.Y., assignor to Hardinge Brothers, Inc., Elmira, N.Y.

Filed Feb. 7, 1973, Ser. No. 330,437

Int. Cl. B23b *31/10*

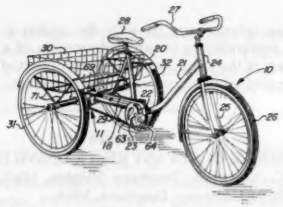
U.S. Cl. 279—1 L **17 Claims**



A self-centering, radially reciprocating jaw chuck for machine tools and the like comprising a chuck body member, a plurality of master jaws secured to the body member, each of the master jaws having a pair of circumferentially spaced fixed portions rigidly secured to the body member and a radially reciprocable portion positioned circumferentially between the fixed portions. Resilient means integral with both the fixed portions and the radially reciprocable portion connect these portions, and a work gripping member is secured to each of the radially reciprocating portions. Axially reciprocable means is provided within the body member for radially reciprocating the radially reciprocable portions, and work gripping members attached thereto, whereby flexure of the resilient means provides a self-centering action of the work

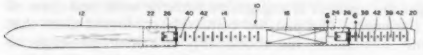
gripping members with respect to the longitudinal axis of the chuck and the work.

3,834,721
TWIN CHAIN DRIVE FOR TRICYCLES
Alan B. Gobby, 6645 N. 58th Ave., Glendale, Ariz. 85301
Filed Nov. 29, 1973, Ser. No. 419,981
Int. Cl. B62m 9/00
U.S. Cl. 280—7.15 8 Claims



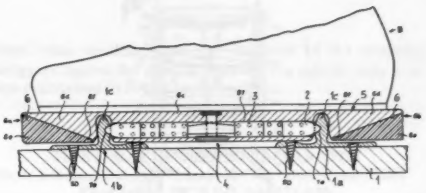
A twin chain drive mechanism for the propulsion of a pair of separated, aligned axle shafts and their attached rear road wheels of a tricycle at various speeds by the manipulation of its pedals, each independent axle shaft having a free-wheeling drive sprocket removably attached thereto which allows for coasting and the variable speeds of the wheels required during operation.

3,834,722
VARIABLE LENGTH SKI
Ewald Joseph Rainer, 15 Maida Vale, Scarboro 703, Ontario, Canada
Filed July 24, 1972, Ser. No. 274,751
Int. Cl. A63c 5/02
U.S. Cl. 280—11.13 K 16 Claims



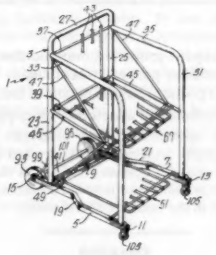
Disclosed is a snow ski which has a convex snow engaging surface for use by an individual in moving over a snow surface and binding means for releasably attaching the ski to a ski boot worn by an individual. Each ski is divided into front, center and rear sections which are attached together to form a rigid ski. Each of the sections is provided with a bottom snow engaging surface for aiding in moving the ski over the snow. In one embodiment the front section is provided with a socket portion into which the center section telescopes and the center section is provided with a socket portion into which the rear section telescopes. Latching means are provided on the front and center sections to selectively lock the relative positions of the sections as desired. In another embodiment, a plurality of front and rear sections are provided of varying lengths and each can be releasably attached to the center section to form skis of different lengths.

3,834,723
SKI BOOT AND USE THEREOF AS PART OF A RELEASABLE SKI BINDING
Richard Erlebach, Riezlern, Austria, assignor to Gertsch AG, Interlaken, Switzerland
Filed Aug. 21, 1972, Ser. No. 282,548
Int. Cl. A63c 9/086
U.S. Cl. 280—11.35 D 21 Claims



A ski boot wherein the toe portion and the heel portion of the ski boot sole which is essentially of a rigid or stiff construction are formed of elastically compressible material. The invention further contemplates employing the ski boot as part of a releasable ski binding wherein connection elements which cooperate with one another until exceeding a boundary load have a part thereof arranged at the ski and another part thereof within the ski boot sole. The connection elements are arranged at the region of the rigid intermediate or central portion of the sole of the ski boot and cooperate with one another through the region of the walking or tread surface of the ski boot sole.

3,834,724
NESTABLE CAR ORDER CART
Antoine Trubiano, 36 Marien St., Montreal East 550, Quebec, Canada
Filed Feb. 9, 1973, Ser. No. 331,272
Int. Cl. B62b 3/02, 11/00
U.S. Cl. 280—33.99 H 4 Claims



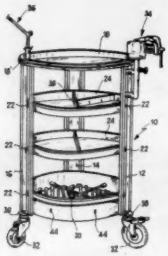
A nestable car order cart having an upright frame opening out toward the front. One, and preferably two, shelves are hingedly mounted at the back of the frame. The shelves can move between a raised position, permitting carts to be nested, and a horizontal position to carry goods. Means are provided on the bottom rear of the cart for camming the lower shelf of a second cart, into which the first cart is being nested, upwardly to the raised position.

3,834,725

TROLLEY ADAPTED TO HOLD OR TO EXHIBIT THINGS OR ARTICLES OF DIFFERENT KINDS

Biagio Luoni, Gallarate, Italy, assignor to USAG S.p.A., Gemonio, Varese, Italy

Filed Oct. 27, 1972, Ser. No. 301,449
Claims priority, application Italy, Mar. 18, 1972, 21330/72
Int. Cl. B62d 53/06
U.S. Cl. 280—79.2 9 Claims



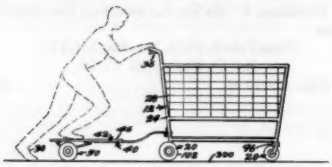
A tool-holder trolley including several vertically stacked tray-like horizontal containers held by three uprights, the upper and lower containers being fixed to the uprights and the intermediate containers being revolvable on bearings carried by the uprights. The uprights have roller wheels at their lower extremities.

3,834,726

STANDING OCCUPANT PROPELLED MERCHANDISE CARRIER

Martin J. Hobza, 3314 S. 5th St., Omaha, Nebr. 68108

Filed Dec. 13, 1971, Ser. No. 207,108
Int. Cl. B60d 3/00; B62k 7/00
U.S. Cl. 280—87.04 R 7 Claims



A standing occupant propelled merchandise cart comprising a forward container portion, wheel means supporting the forward container portion, handle means at the rear of the forward container portion and adapted to be gripped by a standing operator, an operator's riding platform having wheels under it and pivotally attached at its forward end to the forward portion whereby an operator riding on the platform can steer the forward portion, the rearward platform being suitable for propulsion in the manner of a scooter.

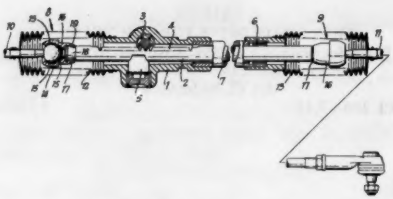
3,834,727

STEERING GEARS

Frederick John Adams, Campton, England, assignor to Cam Gears Limited, Hertfordshire, England

Filed Mar. 21, 1972, Ser. No. 236,646
Claims priority, application Great Britain, Mar. 29, 1971, 8074/71
Int. Cl. B62d 3/12
U.S. Cl. 280—96 7 Claims

A vehicle steering gear assembly of the type in which steering movement is imparted from a movable steering member through a tie rod member interconnected therewith by a universal joint; wherein one of the aforementioned members has an undercut part and that member is secured to the universal joint by deformation of a component part of the joint



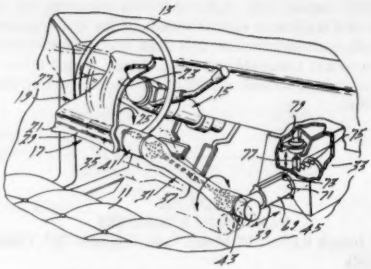
to form an interference fit with the undercut part of that member, preferably by inward deformation of a tubular component part of the joint over the undercut part of that member which the said tubular component part receives.

3,834,728

VEHICLE OCCUPANT RESTRAINING DEVICE

Carroll C. Anderson, Dearborn Heights, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Oct. 8, 1971, Ser. No. 187,721
Int. Cl. B60r 21/02
U.S. Cl. 280—150 B 2 Claims



A device to restrain or limit the forward displacement of a passenger in an automobile vehicle seat. The device includes a padded member which may be adjustably positioned in front of the passenger so that upon forward displacement of the passenger the member is engageable with the waist and chest of the passenger. The pad has concavely contoured sides that permit substantially full accessibility of a driver-passenger to controls in front of the padded member. An adjustable articulated support connects the padded member to the body of the automotive vehicle.

3,834,729

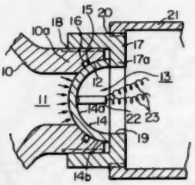
SEALING UNIT FOR PRESSURIZED GAS GENERATOR OF AUTOMOTIVE SAFETY DEVICE

Takashi Oka, Tokyo; Tatsuhiro Arima, Yokohama City, and Tugio Noda, Kawagoe City, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama City, Japan

Filed Feb. 4, 1972, Ser. No. 223,502
Claims priority, application Japan, Sept. 23, 1971, 46-86285; Sept. 23, 1971, 46-86286
Int. Cl. B60r 21/08
U.S. Cl. 280—150 AB 11 Claims

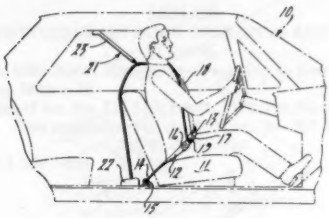
A sealing unit for use in a pressurized gas generator of an automotive safety device for protecting a vehicle occupant from injury during a collision of a motor vehicle. The sealing unit includes a spherical segment formed in a neck portion of

the pressurized gas generator, a semi-spherical hollow member having an inner surface and an outer surface facing the spherical segment, an impact responsive explosive charge mounted in a concave portion of the semi-spherical hollow member, and a cap member threadably engaged with a leading



end of the neck portion of the pressurized gas generator, the cap member having a bottom wall formed with a bore which is aligned with a pressurized gas discharge outlet of the pressurized gas generator and which communicates with an inflatable confinement of the safety device.

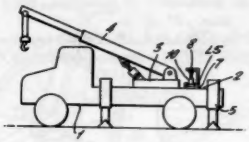
3,834,730
SLING MEANS FOR SHOULDER HARNESS
Denis A. Kansier, Plymouth, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Oct. 2, 1973, Ser. No. 402,675
Int. Cl. B60R *21/10*
U.S. Cl. 280—150 SB **5 Claims**



Sling means for supporting a shoulder harness from a roof rail of a vehicle body. The sling means includes a strap having a loop means at one end to which a ring assembly means is coupled. The improvement comprises a projecting means on the ring assembly means extending longitudinally of the strap and encompassed by a pocket means sewn between layers of the strap. The projecting means and pocket means coact to restrain the ring assembly means against twisting or rotating movement in the plane of the strap.

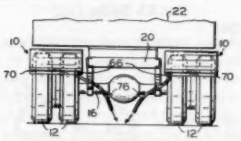
3,834,731
AUTOMATIC HORIZONTAL POSITIONING DEVICE FOR LOAD HANDLING VEHICLE
Takeshi Uehara, Sakura, Japan, assignor to Unic Corporation, Chiyoda-ku, Tokyo, Japan
Filed Oct. 19, 1972, Ser. No. 298,816
Claims priority, application Japan, Nov. 2, 1971, 46-86723
Int. Cl. B60s *9/10*
U.S. Cl. 280—150.5 **4 Claims**

An automatic horizontal positioning device for a load handling vehicle such as a truck crane, comprising sensing means for sensing tilting of the vehicle having a weight causing contacts of limit switches to close when the vehicle is tilted, magnet valves adapted to be operated in response to the sensing means to supply hydraulic pressure to head ends of vertical outriggers at the lowered portions of the vehicle, and pressure switches for changing over said magnet valves to shut off the hydraulic pressure to the head ends of the vertical outriggers when pressure in the head end chambers exceeds a predeter-



mined value resulting from the abutment of the extended outriggers against the ground, whereby the vehicle body is always maintained in its horizontal position.

3,834,732
TIRE SPRAY COLLECTOR APPARATUS
Pete A. Schons, 2245 S. W. Marth St., Portland, Oreg. 97201
Filed July 2, 1973, Ser. No. 375,620
Int. Cl. B62b *9/16*
U.S. Cl. 280—154.5 R **12 Claims**

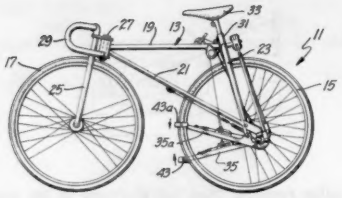


A tire spray collector apparatus for reducing the water spray at the side of a vehicle is described, including a shield member and an apertured collector member positioned below such shield member and above the tires of a truck, automobile or other wheeled vehicle. The collector member and shield member are attached together to form a closed spray collecting chamber that is sealed around the entire periphery of such members. As a result, water spray from the tires enters the chamber through the openings in the collector member and is prevented from leaving the chamber, except through drains provided at the opposite ends of the spray collector apparatus. Flexible hoses are connected to these drains and have their outlet ends positioned adjacent the ground to discharge the drain water inwardly of the wheels to prevent such drain water from producing further tire spray. In one embodiment, the collector member is in the form of a corrugated sheet having a plurality of upward opening longitudinal channels separated by longitudinal ridges which have a plurality of openings provided in the tops of such ridges so that water spray enters the collector chamber through said openings, is reflected from the shield member and flows along the bottoms of the channels to the discharge hoses. The tire spray collector apparatus does not extend over the side of the tires, so that it does not cause overheating of such tires, and also enables easy removal of the tires and installation of tire chains.

3,834,733
VELOCIPEDE
Trevor L. Harris, Costa Mesa, Calif., assignor to Harris Dynamics, Costa Mesa, Calif.
Filed Dec. 15, 1972, Ser. No. 315,497
Int. Cl. B62m *1/08*
U.S. Cl. 280—251 **9 Claims**

A velocipede comprising a frame, a drive wheel rotatably attached to the frame, first and second levers pivotally mounted on the frame for oscillation about first and second axes, respectively, and a power transmission for transmitting

power resulting from oscillation of the levers to the drive wheel. The drive ratio between the levers and the drive wheel



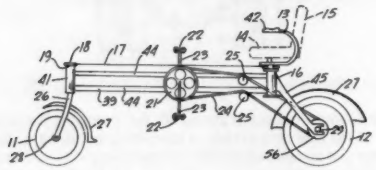
can be adjusted by the rider while the velocipede is being ridden by moving the location of the attachment of the transmission to the levers longitudinally along the levers.

3,834,734

BICYCLE

Pietro Chiappetti, Los Angeles, Calif., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Feb. 13, 1973, Ser. No. 332,237
Int. Cl. B62m *1/02*
U.S. Cl. 280—261 **2 Claims**



An improved bicycle in which the wheels are spaced considerably apart to increase riding comfort, with driving pedals mounted above the centerline of the bicycle driving wheel to permit the legs of the rider to rest at an acute angle to the horizontal plane. Steering means may be provided in proximity to the seat of the rider, utilizing a cable connection between the steering means and the front steering wheel, or alternately a rotatable steering shaft may extend from the front steering wheel to the position of the seated driver, with said rotatable shaft being geared to the fork of the front steering bicycle wheel so as to steer the bicycle wheel in response to rotation of the steering shaft.

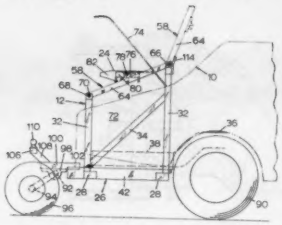
3,834,735

TRAILER HITCH MECHANISM

Charles M. Winter, 2580 W. Philadelphia St., York, Pa. 17404

Filed Dec. 14, 1972, Ser. No. 314,952
Int. Cl. B62d *53/00*
U.S. Cl. 280—423 R **14 Claims**

Hitch mechanism for attaching a fifth wheel type trailer to the rear portion of a passenger-type motor vehicle having a rear trunk, the hitch mechanism including frame means preferably detachably interconnectable to the rear portions of the chassis frame members of the motor vehicle and extending beyond the sides thereof to provide vertical frame means extending up along the exterior portions of the rear fenders and across the top of the trunk to support a fifth wheel hitch member adapted to receive the fifth wheel hitch pin on the front end of a fifth wheel trailer. When the trailer is disconnected from the hitch mechanism, the frame means extending across the top of the trunk is pivotally movable upwardly to permit the trunk cover to be raised to gain axcess to the interior of the trunk. Auxiliary supporting wheels are connected to the frame means to augment the support provided by the conventional rear wheels of the motor vehicle and supplemental



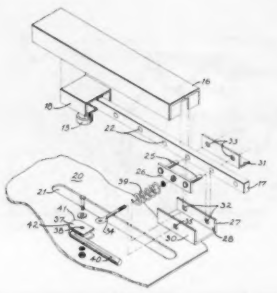
hitch means may be provided on the frame for purposes of connecting a conventional trailer thereto by normal hitch means.

3,834,736

ADJUSTABLE KINGPIN ASSEMBLY FOR TRAILERS

Gilbert Edward Dodgson, 412 9th Ave. West, Polson, Mont. 59860

Filed July 27, 1973, Ser. No. 383,372
Int. Cl. B62d *53/08*
U.S. Cl. 280—407 **3 Claims**



An assembly is described herein for enabling the load distribution and overall length of a tractor trailer combination to be selectively varied. The assembly includes a king pin mounted to an elongated support bar. The support bar is slidably carried within a channel fixed to the trailer. The support bar includes longitudinally spaced apertures through which a pair of locking pins are received to enable the king pin to be selectively locked at any of several longitudinal positions. By thus adjusting the king pin, the user is able to adjust the weight distribution of the load between the trailer rear wheels and the tractor drive wheels. Additionally, such adjustments enable one to vary the overall length of the semi-truck.

3,834,737

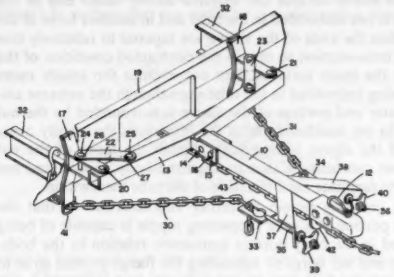
DEVICE FOR TOWING ONE VEHICLE WITH ANOTHER

Edward John Elkins, Concord, Calif., assignor to Valley Tow-Rite, a division of Scott & Fetzer Co., Lodi, Calif.

Filed Mar. 19, 1973, Ser. No. 342,644
Int. Cl. B60d *1/14*
U.S. Cl. 280—502 **7 Claims**

A tow device having a rigid transverse frame capable of limited internal flexing motion and attachable to a towing vehicle is disclosed. A first foot is disposed at one side of the transverse frame and a second foot is disposed at the opposite side of the transverse frame, each foot abuttable against the

bumper of the vehicle to be towed. Chain guides are provided on the underside of each foot. Two chains are provided which attach to the frame of the vehicle to be towed, one chain passable through the chain guide on the underside of the first



foot and the second chain passage through the chain guide on the underside of the second foot to attach to the transverse frame. Means are provided for tensioning the chains so that the first and the second feet are pressed against the bumper of the vehicle to be towed.

3,834,738

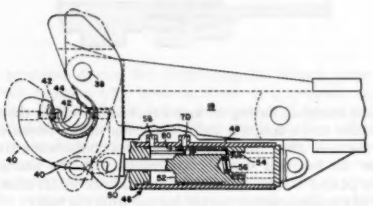
COMBINED DRAFT HOOK OPERATING AND DRAFT SENSING

James Allan Koch, Hudson, Iowa, assignor to Deere & Company, Moline, Ill.

Division of Ser. No. 222,557, Feb. 1, 1972, Pat. No. 3,731,745. This application May 4, 1973, Ser. No. 357,335

Int. Cl. B60d *1/04*

U.S. Cl. 280—504 **15 Claims**



The lower draft links of a tractor three-point hitch include pivotal draft hooks which are power swung, by a pair of one-way hydraulic actuators, between open and closed positions for respectively receiving and retaining a hitch part of an implement. In the case of an earth-working implement, draft loads imposed on the hooks by the implement may vary during operation and cause variations in the pressure of the fluid in the actuators. A pressure responsive direction control valve is connected to the actuators and is shiftable in response to pressures above and below a preselected pressure for respectively directing fluid pressure to and exhausting fluid from a hydraulic lift cylinder for raising and lowering the draft links for adjusting the implement so as to maintain the preselected pressure in the actuators.

3,834,739

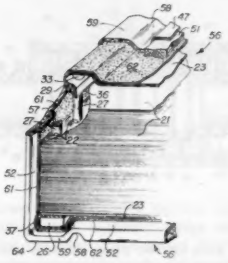
CASED BOOK USING END SHEETS BOUND WITH PLASTIC RETAINERS

William H. Abildgaard, and Charles T. Groswith, III, both of Los Altos, Calif., assignors to Velco-Bind, Inc., Sunnyvale, Calif.

Continuation-in-part of Ser. No. 146,648, May 25, 1971, Pat. No. 3,749,423. This application July 23, 1973, Ser. No. 381,418

Int. Cl. B42d *1/00*

U.S. Cl. 281—21 **17 Claims**



An end sheet, which may be reinforced with fabric, paper or other material, is bound along with the pages of the book and the corresponding end sheet for the opposite end of the book by means of plastic strip retainers as disclosed in U.S. Pat. No. 3,730,560. The end sheet is secured to the inside of the cover of the case by adhesive. In preferred forms of the invention, at least one portion of the end sheet extends from under the spine edge of the plastic strip and folds outside the outer surface of the strip. In this form, the cover lies flat when opened. In other preferred forms, the end sheet extends from under the plastic strip in both directions.

3,834,740

CONNECTING PIECE FOR PRESSURE VESSEL COVER OF NUCLEAR REACTORS

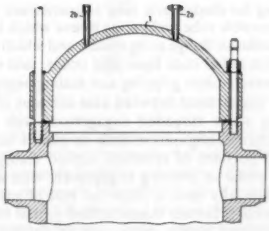
Erich Bazant; Horst Cerjak, and Manfred Scholz, all of Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munchen, Germany

Filed Nov. 20, 1970, Ser. No. 91,302

Claims priority, application Germany, Nov. 22, 1969, 1958670

Int. Cl. F16l *9/14*

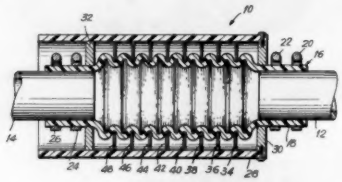
U.S. Cl. 285—55 **2 Claims**



A connecting piece extends into a port formed in a nuclear reactor pressure vessel cover having a plated layer on the inner surface thereof. The compound piece is made up of a compound tube provided with an austenitic steel inner liner tube at least in the vicinity of the port, the connecting tube extending within the port substantially to the inner surface of the

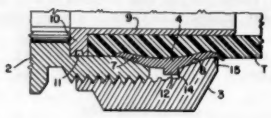
pressure vessel cover and being secured to the plated layer by welding.

3,834,741
EXPANSION JOINT
Frederick E. Drake, c/o Elastofab Company, Inc., Oak Ridge Road R. D. No. 3, Oak Ridge, N.J. 07438
Filed Apr. 26, 1973, Ser. No. 354,691
Int. Cl. F16l *21/00*
U.S. Cl. 285—226 **7 Claims**



An expansion joint for two pipes wherein one of said pipes can move relative to the other of said pipes. Said expansion joint includes a flexible sleeve having a first end, a second end and a corrugated portion there between. Clamping means secures said first end of said flexible sleeve to one pipe and additionally clamping means secures said second end of said flexible sleeve to the other pipe. Annular floating rings are provided with each ring surrounding a groove between two ridges in the corrugated portion of said flexible sleeve.

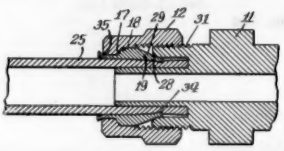
3,834,742
TUBE COUPLING
Norris J. McPhillips, Otsego, Mich., assignor to Parker-Hannifin Corporation, Cleveland, Ohio
Continuation-in-part of Ser. No. 112,964, Feb. 5, 1971, abandoned. This application Nov. 3, 1972, Ser. No. 303,480
Int. Cl. F16l *33/20*
U.S. Cl. 285—249 **5 Claims**



A coupling for elastomeric tube characterized in the provision of a reversible tube embracing sleeve which has a radially projecting collar or flange at its middle and which is tapered to relatively thin radial ends from said collar, said sleeve, when radially contracted into gripping and sealing engagement with the tube by engagement between cam surfaces of a nut and a body having screw threaded engagement with each other, being of arched configuration from its middle toward its end with its end portions of reversely curved configuration and having said collar in abutting engagement with a shoulder in the nut and axially spaced from the end of said body. The coupling herein is further characterized in that the body, nut, and uncontracted sleeve bores are of substantially equal diameter slightly larger than the tube diameter, and although the axially outer end portion of the sleeve is contracted to greater extent than the axially inner end portion of the sleeve the greatest sealing and gripping pressure is obtained at the axially inner end portion of the sleeve whereat it has camming engagement with the body cam surface and whereat it is contracted into engagement with the tube owing to the axial crowding action exerted on the tube while it is abutted against a stop shoulder in the body as the axially outer portion of the sleeve is contracted by the nut member and axially advanced with respect to the tube during the contraction of the axially inner end portion of the sleeve by engagement with the body cam surface. In one form of the invention the nut bore is flared out or terminates short of the axially outer end of the contracted sleeve so that the extreme axially outer end of the sleeve is not embedded in the tube and in another form of the invention the ends of the sleeve are tapered to relatively thin radial cross-section so that in the contracted condition of the sleeve the inner surfaces flare out without the axially outer end being embedded in the tube even though the extreme axially outer end portion of the sleeve is surrounded by the nut bore. In yet another form of the invention, the axially outer end of the sleeve is tapered to match the taper of the nut member cam surface thus to align the body, sleeve, and nut bores to facilitate axial insertion of the tube therewithin.

The coupling herein is further characterized in that the flange portion of a tube supporting nipple is capable of being secured in the body bore in concentric relation to the body, sleeve, and nut bores by expanding the flange portion so as to engage the body bore as by a knurling operation on the flange or by a staking operation on the axially outer end face of the flange portion. The present invention also contemplates the provision of a tube supporting nipple having frictional engagement in the body so as to retain the nipple in place during shipment, storage, and handling but which becomes a part of the tube-contracted sleeve assembly so that when the nut is unscrewed from the body, the tube together with the contracted sleeve therearound and the nipple therewithin may be axially withdrawn from the body bore.

3,834,743
TUBE COUPLING
Richard V. Strybel, Elk Grove Village, Ill., assignor to Imperial-Eastman Corporation, Chicago, Ill.
Filed Nov. 20, 1972, Ser. No. 308,144
Int. Cl. F16l *33/00*
U.S. Cl. 285—249 **8 Claims**

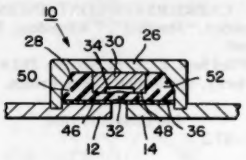


A tube coupling having an insert receivable within the end of the tube to be coupled and a clamping sleeve constricted about the tube end. The coupling includes cooperating structure on the nut and sleeve coordinated with the clamping force to permit withdrawal of the tube from the insert as an incident of threaded withdrawal of the nut from the body.

3,834,744
PIPE COUPLING
Morteza Masatchi, Rochester, N.Y., assignor to Garlock Inc., Palmyra, N.Y.
Filed June 19, 1972, Ser. No. 264,321
Int. Cl. F16l *21/06*
U.S. Cl. 285—373 **12 Claims**

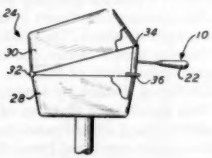
A pipe coupling for use with a coupling shell for sealingly connecting together two adjoining pipe ends, said coupling including an elastomeric gasket overlying the pipe ends and the gap therebetween and a rigid back-up ring overlying the gasket and forming a cavity between the ring and gasket. Installation of the coupling shell compresses the gasket, and the central portion of the gasket over the gap, when forced to move, preferentially moves into the cavity and away from the

gap. Several gasket-ring embodiments are described, and each one prevents the gasket from moving or being extruded into the gap between the pipe ends. The cavity is preferably formed as a groove in the I.D surface of the ring between two inwardly extending flanges; the flanges prevent all portions of the gasket except the underlying central portion from being able to move into and fill-up the cavity. The gasket has a cylindrical I.D. surface that can easily be provided with a corrosion



resistant liner and that can easily slip over the adjoining pipe ends. The gasket-ring assembly can be used with conventional coupling shells and pipe ends, or the ring can be an integral part of a new coupling shell of this invention. The gasket also has recesses on its O.D. surface to prevent any alastomer from extending into the gaps between arcuate portions of the coupling shell.

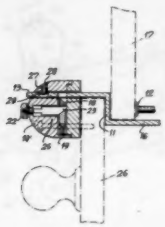
3,834,745
PROPPING DEVICE FOR OUTDOOR STOVES
Richard H. Coates, 10 Fremont Ter., Livingston, N.J. 07039
Filed Oct. 2, 1972, Ser. No. 294,248
Int. Cl. E05c *17/54*
U.S. Cl. 292—339 **2 Claims**



A propping device for supporting the hinged cover of a ceramic radiator-type cooking stove at a partially opened position. The device includes an oblongated propping body provided at one end thereof with a cradle portion adapted to receive the front rim of either the cover or of the underlying stove section. The opposite end of the propping body may adjoin a baseplate which engages the alternate rim of the stove; or this opposite end may include a second cradle portion for engaging the alternate rim. A handle extends outwardly from the propping body and terminates at a non-heat conducting portion, enabling manipulation of the device by a user. The propping body may be selectively adjustable in length, as to enable stove openings of desired dimensions.

3,834,746
DRAWER AND CABINET SAFETY LOCK
Alan W. Hinden, Brooklyn, N.Y., assignor to Promo-Pat Inc.
Filed Dec. 20, 1972, Ser. No. 316,730
Int. Cl. E05c *19/18*
U.S. Cl. 292—290 **7 Claims**

In a preferred embodiment, a drawer detachably-mountable locking device of simple construction and operation, for securing a closed drawer against opening by a child of younger years thereby avoiding safety hazards against a young child getting to dangerous items such as knives, scissors, drugs, poison cleaners, needles, and the like, a preferred device being a cabinate-structure clamp vise-clampable onto the flange over the open-drawer cabinate, with an extension extending forwardly beyond the front of the closed drawer, the extended portion including a key-receiving aperture, and a drawer-wedge locking element pressable against the front of



the closed drawer, the extended portion including a key-receiving aperture, and a drawer-wedge locking element pressable against the front of the closed drawer and when in that position being key-projection-lockably insertable into the aperture thereby locking the drawer in the closed state, the inserted state being preferably turn-key-securable to prevent removal of the inserted locking key-projection.

3,834,747
MULTIPLE LATCH LOCK ASSEMBLY AND METHOD
Mike J. Slovensky, Jr., Twinsburg, Ohio, assignor to Cleveland Hardware & Forging Co.
Filed Mar. 24, 1972, Ser. No. 237,715
Int. Cl. E05c *1/12*
U.S. Cl. 292—38 **3 Claims**

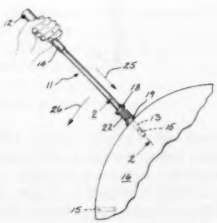
The specification and drawings disclose a multiple latch assembly particularly suited for use in contoured vehicle doors. The disclosed assembly includes a plurality of latch members each having an outwardly biased latch pin. Operatively connected to all of the latch pins is a common operating assembly including a case defining a cavity and a handle pivotally mounted between the sides of the cavity. A slide member is carried on the case and interconnects with the handle so that oscillation of the handle produces reciprocation of the slide member. Lengths of flexible actuating cable are connected between the slide member and each of the latch pins. Each length of cable is arranged so that movement of the slide member in one direction will produce simultaneous inward movement of all latch pins.

3,834,748
SELF-LOCKING PRICE TAG
Noble M. Lonnee, 2204 Woodview Dr., Riverview, Mich. 48197
Filed June 8, 1973, Ser. No. 368,308
Int. Cl. B65d 33/34
U.S. Cl. 292—320 1 Claim

A self-locking price tag for attachment to articles of merchandise having a body with a plurality of transverse baffles. Each of the transverse baffles has an opening therethrough, all of which are in substantial alignment. An elongated member, fixed to the body, has on one end thereof a flat element on which to apply pricing information. The other end of the elongated member has a tip insertable through the openings in the transverse baffles so as to provide an attachment loop to receive merchandise. A plurality of outwardly and rearwardly disposed flexible barbs are provided on the elongated member adjacent the insertable tip.

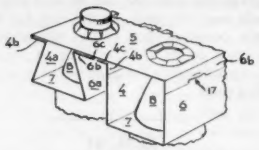
The openings in the transverse baffles are adapted to pass the flexible barbs therethrough when a pull of sufficient magnitude is exerted on the insertable tip. This permits the attachment loop being formed in the elongated member to be reduced in size so as to provide a suitable griping engagement with the merchandise being tagged. The flexible barbs on the elongated member cannot be drawn in a reverse direction through the openings in the transverse baffles without damaging the tag, thus making it readily apparent whenever the pricing information on the merchandise has been switched.

3,834,749
TURNOVER BAR
Albert C. Phelps, 3219 W. Lisbon Ave., Milwaukee, Wis. 53208
Filed Apr. 23, 1973, Ser. No. 353,520
Int. Cl. B65g 7/00
U.S. Cl. 294—15 4 Claims



A turnover bar is disclosed having a hole engaging end portion. The bar is provided with self-removal mechanism including an external collar movable on the hole engaging portion of the bar. The collar is normally biased by an external spring at least to the end of the hole engaging portion of the bar. The collar is manually depressed against the bias of the spring in service to effect an engagement of the bar with a turnover hole provided in some portion of a drive mechanism. The biasing force of the spring is adequate to lift the bar and effect a removal of the bar from the hole after use lest the bar be forgotten.

3,834,750
CARRIERS FOR CONTAINERS
John H. Gauntlett, "Mayfield", 7 Kingsdene, Tadworth, Surrey, England
Filed Sept. 27, 1972, Ser. No. 292,668
Claims priority, application Great Britain, Oct. 1, 1971, 45927/71
Int. Cl. B65d 71/00
U.S. Cl. 294—87.2 8 Claims

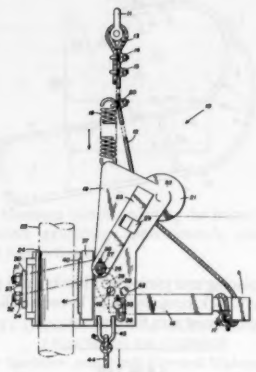


This disclosure relates to a carrier of foldable sheet material, such as cardboard, for carrying containers, such as bottles or the like, in one or more rows in which the carrier is a four-sided hollow tubular structure into which a part of the container extends and at least one of the carrier sides is deformable inwardly to exert a positive gripping action on such containers so that the containers are firmly held and the carrier is stressed to give a rigid structure. The disclosure also extends to a blank for forming such a carrier, the blank comprising a substantially rectangular piece of foldable material such as, for example, cardboard divided by longitudinally extending fold lines into four panels such that two of the panels which form carrier sidewalls have a third panel therebetween which forms one of the carrier upper and lower walls and the third and fourth panels forming the carrier upper and lower walls have one of the carrier side walls therebetween, a further longitudinally extending fold line formed in at least one of the sidewall panels intermediate the width thereof, openings in at least one of the upper and lower wall panels to allow a container part to pass therethrough and means on one longitudinal edge of the blank attachable to the other longitudinal edge of the blank or a part associated therewith to enable the blank to be folded to and secured in a hollow closed four-sided figure in cross-section.

3,834,751
TRANSFER ELEVATOR FOR INTEGRAL AND COLLAR TUBING
Wayne L. Brackin, Warren, Tex., assignor to Dresser Industries Inc., Dallas, Tex.
Filed Mar. 12, 1973, Ser. No. 340,158
Int. Cl. B66c 1/44
U.S. Cl. 294—104 3 Claims

A transfer elevator for handling pipe. The pipe may or may not include collars. An elastic element such as a spring holds slips in a retracted position until the elevator reaches the desired setting location on the pipe. A force is applied downward on a rope attached to the elevator body thereby

causing movement of a lever and the setting of the slips. The weight of the pipe maintains the slips in position firmly



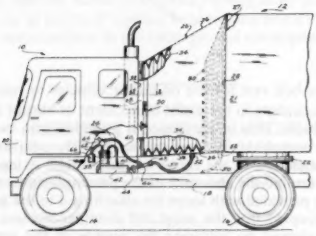
gripping the pipe until the pipe is set down and the weight is removed. The slips automatically unset and the elevator travels along the pipe to a desired position for removal.

3,834,752

VEHICLE SPACE CLOSING MEANS

Neal A. Cook, 4449 N. Maryland Ave., and Gerard Friedenfeld, 4215 N. Prospect Ave., both of Milwaukee, Wis. 53211

Filed Jan. 18, 1973, Ser. No. 324,787
Int. Cl. B62d *35/00*
U.S. Cl. 296—1 S **8 Claims**



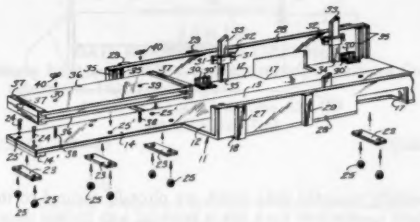
This disclosure relates to large motor trucks commonly known as semi-trailers and to an arrangement for closing or filling in the rather substantial space which necessarily exists between the tractor cab and the trailer body, as well as the space between two trailer bodies in the case of tandem trailers or "double-bottoms," as known in the trade. Closing in of such spaces has been shown in wind tunnel tests to effect a reduction in power necessary at high speeds substantially in excess of that which can be accomplished by smoothing or streamlining other parts of the combination. It is contemplated that the closing means may be in the form of a flexible enclosure or bag-like member which may be inflated by the exhaust gas from the tractor engine, in which case the bag would act as an effective silencer for the exhaust noise, although other means for inflating the bag may be utilized, or the bag may be used without inflation, within the scope of the invention.

3,834,753

COMBINATION BOAT AND UTILITY TRAILER STRUCTURE

Mary H. Heiter, and Carl B. Heiter, Jr., both of 8906 Western Hills Rd., Kansas City, Mo. 64114

Filed Mar. 12, 1973, Ser. No. 340,268
Int. Cl. B62d *21/12*; **B60p** *3/10*
U.S. Cl. 296—10 **3 Claims**



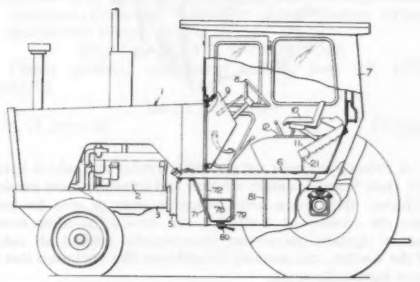
A trailer structure consisting primarily of a flat bed with a catwalk, the bed having hinged side boards for use when the device is used as a utility trailer, the ends of the side boards receiving removable panels, the side boards being supported by removable stakes.

3,834,754

ISOLATED TRACTOR PLATFORM

William J. Zajichek, New Berlin, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Jan. 29, 1973, Ser. No. 327,675
Int. Cl. B62d *23/00*; **B60j** *7/24*
U.S. Cl. 296—35 R **11 Claims**



A resiliently mounted platform mounted on a tractor having cross beams carried on the chassis for resiliently supporting the platform.

3,834,755

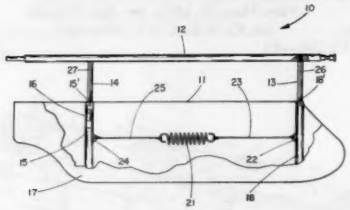
AUTOMOBILE SUNSHINE SHADE

Carl J. Dexter, 130 Hideaway Ln., West Lafayette, Ind. 47906

Filed Mar. 9, 1973, Ser. No. 339,515
Int. Cl. B60j *3/02*
U.S. Cl. 296—97 G **3 Claims**

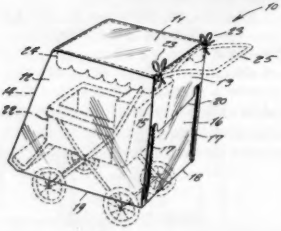
An automobile sunshine shade which is movable downwardly to extend the area of shade. In one embodiment, the shade includes a pair of hollow tubes which slidably receive a pair of stems fixedly mounted to the shade support rod. A spring urges the tubes to a position where the tubes

bind on the stems thereby locking the shade in the desired position. In another embodiment, the shade includes a pair of



pivotally mounted links which are pivotally secured to the shade support rod. Each link is provided with friction means for locking the shade in the desired position.

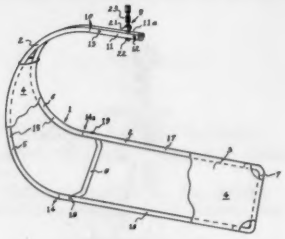
3,834,756
RAINCOVER FOR STROLLER WITH CANOPY
Helga U. Grell, 80-76 Cypress Ave., Ridgewood, N.Y. 11227
Filed Feb. 6, 1973, Ser. No. 330,039
Int. Cl. B60j *9/00*
U.S. Cl. 296—136 **1 Claim**



A protective cover for a child's stroller and which keeps the child from inclement weather and splashing from passing vehicles; the device being placable over or else be built into the canopy of a stroller, the device including transparent curtains depending downwardly around all sides of the stroller, thus forming an umbrella-like enclosure that is open from underneath.

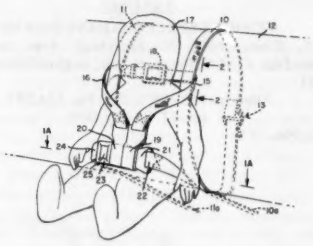
3,834,757
SINGLE SUSPENSION LOUNGER
Michael R. Krupsky, 20 Corsi Rd., Broomfield, N.J. 07003
Filed Oct. 11, 1972, Ser. No. 294,883
Int. Cl. A63g *9/00*
U.S. Cl. 297—277 **1 Claim**

A vertically suspended curved rest lounger having upper auxiliary straight support portions being adjacent and joined to one another and extending from the upper end of two curved back rest members wherein said auxiliary straight support portions provide weight bearing struts to suspend the lounger at a single point for swinging, oscillating, and revolving, of the lounger in balance and within the trace of gravity lines from the single suspension point to two lower horizontally opposed auxiliary straight support portions extending from the lower end of the two curved back rest members, wherein said two lower horizontally opposed auxiliary portions are joined by a brace at their respective ends to provide a



space for the placing and joining of a flexible rest pad between the said curved back rests and said lower auxiliary portions thereby providing a rest area for humans.

3,834,758
SAFETY BELT FOR USE ON MOTOR VEHICLES
Frank A. Soule, P.O. Box 744, Los Gatos, Calif. 95030
Filed Mar. 1, 1973, Ser. No. 337,066
Int. Cl. A62b *35/00*
U.S. Cl. 297—389 **3 Claims**

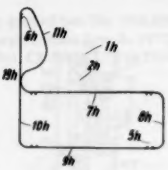


A safety belt vest for use on motor vehicles to restrain the vehicle occupants in the event of accident or abrupt stopping of the vehicle. This safety device is provided with two straps that pass completely around the back of the seat and these may be anchored to the frame of the vehicle. A lap strap is provided around the abdomen of the passenger and a shoulder harness is provided with loops for attaching it to the buckle of the lap strap so that the strap and shoulder harness may be quickly released by releasing the buckle of the strap. The inner surfaces of the back straps are provided with a plurality of spaced members for receiving the shoulder harness therebetween so that the vertical position of the shoulder harness may be adjusted whereby the safety device may be adjusted for use by children or adults.

3,834,759
FURNITURE
Verner Panton, Holeeholzweg 75, CH-4102 Binningen, Switzerland
Filed Dec. 21, 1972, Ser. No. 317,165
Claims priority, application Germany, Dec. 22, 1971, 2163691
Int. Cl. A47c *7/6, 7/14*
U.S. Cl. 297—445 **21 Claims**

A furniture piece with a supporting frame of bent or curved rod material, which supporting frame is composed of a plurality of substantially identical frame members closed in them-

selves and arranged in spaced relationship to each other and adjacent each other and made up of bent wire, and of transverse frame elements interconnecting the frame members, the frame members extending approximately over the entire length of the supporting frame.



3,834,760

IN-SITU GENERATION OF ACID FOR IN-SITU LEACHING OF COPPER

Henry Rush Spedden, and Emil Edward Maloue, both of Salt Lake City, Utah, assignors to Kennecott Copper Corporation, New York, N.Y.

Filed July 18, 1973, Ser. No. 380,245
Int. Cl. E21b *43/28*; **E21c** *41/14*
U.S. Cl. 299—5 **6 Claims**

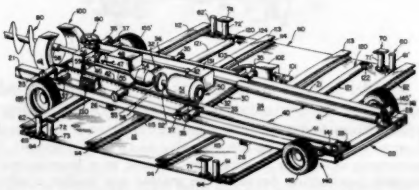
In-situ leaching of underground, copper-bearing ore deposits or waste dumps containing copper sulfide minerals is accomplished by introducing a hydraulic fluid containing particulate pyrite into the underground ore deposit or waste dumps under sufficient pressure to fracture the formation and to deposit the pyrite particles contained in the fluid in the fractures as a propping agent. An aqueous leach liquid and oxygen is then injected into the formation. The oxygen injected into the formation reacts with the pyrite propping agent in the presence of the aqueous leach liquid to rapidly produce ferric sulfate and sulfuric acid, which rapidly dissolves the copper sulfide minerals. The dissolution of the copper sulfide is accelerated by the in-situ generation of heat due to the oxygen reacting with the particulate pyrite, as well as by galvanic action set up at points of contact between the particulate pyrite and the metal sulfides in the underground ore deposit or waste dump.

3,834,761

DEEP-MINE AUGERING MACHINE

Lindsey W. Ray; William S. Bryant, both of Summersville, and William A. Ray, Cottle, all of W. Va., assignors to Lindsey W. Ray, Summerville and William A. Ray, Cottle, both of, W. Va.

Filed Oct. 6, 1972, Ser. No. 295,511
Int. Cl. E21c *27/22*
U.S. Cl. 299—10 **23 Claims**



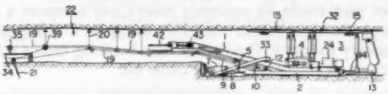
An auger deep-mining machine for extracting minerals, such as coal, from relatively thin seams thereof and having an auger-rotating carriage which reciprocates, by means of sump jacks, toward and away from the coal face on a rigid, elongated sump frame which is equipped with steerable wheels for tramming and slides laterally upon a pair of rails attached to an underlying square anchor plate, having floor and roof jacks at each corner, under control of position jacks attached to the anchor plate. Because the wheels are selectively attachable at either an extended or retracted position, the machine is shiftable laterally by a leap-frogging procedure during which the anchor plate hangs from the sump frame. A dust collection means at the face end of the sump frame removes dust emerging from the hole being augered.

3,834,762

GATE ROAD DINTING EQUIPMENT

Shigeo Kakajima, Kushiro, Japan, assignor to Taiheiyo Coal Mining Co., Ltd., Tokyo, Japan

Filed Feb. 12, 1973, Ser. No. 331,479
Int. Cl. E21c *27/18*
U.S. Cl. 299—43 **1 Claim**



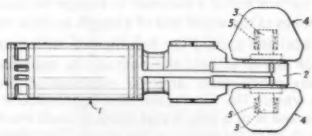
The present invention relates to gate road dinting equipment comprising a rapidly advancing coal mining face and a gate road conveyer consolidated in such a manner that a dinting machine of the ranging type is set in place on a skid with a charge conveyer fixed thereon for removing a floor by a cutting drum of the dinting machine and for adjusting the height of the charge conveyer properly, so that a proper excavation height can be maintained for a discharge conveyer and face equipment as well.

3,834,763

DIVIDED TOOL CUTTER HEAD HAVE TORQUE YIELDING COUPLING

Siegfried Sigott, Zeltweg, Austria, assignor to Vereinigte Osterreichische Eisen-und Stahlwerke-Alpine Montan Aktiengesellschaft, Vienna, Austria

Filed June 28, 1973, Ser. No. 374,386
Claims priority, application Austria, June 30, 1972, 5641/72
Int. Cl. E21c *27/24*
U.S. Cl. 299—85 **5 Claims**



A cutting tool shaft is mounted in the free end portion of a jib arm and has a shaft end portion protruding from the free end portion of the jib arm. A cutting tool is carried by said shaft end portion. Torque-limiting clutch means connect said cutting tool to said shaft.

3,834,764

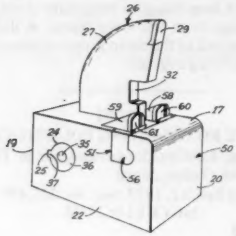
CORE BREAKING MEANS

Claude B. Krekeler, Cincinnati, Ohio, assignor to The Cincinnati Mine Machinery Co., Cincinnati, Ohio

Filed Aug. 11, 1972, Ser. No. 279,816
Int. Cl. E21c *35/18*
U.S. Cl. 299—86 **80 Claims**

Core breaking means for use with mining machines and the like of the type having cutter bits and mounting means

therefor. The core breaking means are mounted on the cutter bit mounting means and provide core cutting or breaking tips to one or both sides of the cutter bit. The core breaking means



for each cutter bit mounting means may comprise a pair of separate elements, or they may comprise a single, integral, unitary structure. Finally, the core breaking means may constitute an integral part of the cutter bit.

3,834,765

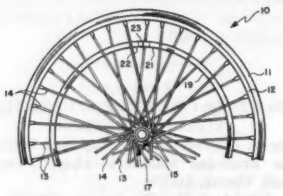
DECORATIVE AND SAFETY ATTACHMENT FOR SPOKE WHEELS

Robert C. Trimble, 258 Main St., Northboro, Mass. 01532

Filed Jan. 21, 1974, Ser. No. 435,322

Int. Cl. B60b *7/00*

U.S. Cl. 301—37 R **10 Claims**



Decorative and safety wheel tubular member, particularly adapted for spoke wheels of bicycles, motorcycles, and the like, comprising a flexible member, preferably in the form of an extruded, flexible hollow length, having a light reflective outer surface and of a diameter to engage the inner portions of the spokes of the wheel and of a length to close on itself within the wheel and around the hub thereof, with means such as a plug or sleeve to hold the ends of the member together in abutting relationship, and the combination thereof with a spoke wheel. The tubular member is introduced between the spokes and is of a length that when its ends meet it is in contact with all of the spokes of the wheel. The tubular member is desirably formed with a reflective outer surface and with marks designating suitable length for smaller wheels.

3,834,766

WHEEL ADAPTER

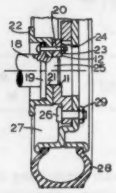
John L. Thousand, Newport Beach, Calif., assignor to Revcon, Incorporated, Fountain Valley, Calif.

Filed Oct. 5, 1972, Ser. No. 295,290

Int. Cl. B60b *3/14*

U.S. Cl. 301—9 DN **4 Claims**

A wheel adapter mounting high weight capacity truck wheels and tires on automotive hubs and spindles. The adapter mounts on a standard automobile five stud hub with studs on a 5 inch diameter circle. Clamping force of the five studs with wheel bolts tightened to a predetermined relatively high uniform torque at the factory secures the adapter to the hub making possible utilization of a conventional truck wheel with five studs on an 8 inch bolt circle for maximum load carrying capacity. The wheel hub bolts on the 5 inch circle studs are so tightened that torque loads due to braking and acceleration



are transmitted between the wheel and hub by friction rather than any material shear load on the hub bolts. The wheel adapter is installed with a center opening light press fit on a wheel hub and radial loads transmitted directly to the hub with the bolt pattern not required to assume any additional loading.

ERRATUM

For Class 302—60 see:
Patent No. 3,834,768

3,834,767

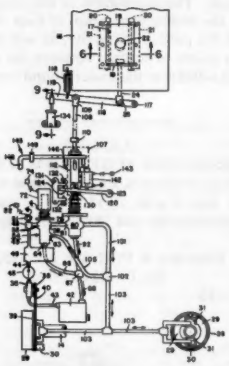
TRAILER AUXILIARY HYDRAULIC BRAKE SYSTEM

David John Bullinger, Cayuta Rd., Van Etten, N.Y. 14889

Filed Mar. 26, 1973, Ser. No. 345,086

Int. Cl. B60t *13/08*

U.S. Cl. 303—7 **6 Claims**



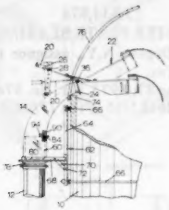
A trailer auxiliary hydraulic brake system completely independent of the conventional brake system and including a wheel-driven hydraulic pump, an accumulator, a main brake control valve, a back-up release valve and a fluid reservoir. An automatic actuation member, responsive to a longitudinally slidable connection between the tractor and trailer, controls the flow of pressurized hydraulic fluid to and from the trailer brakes. The trailer auxiliary system, in addition to automatically energizing the trailer brakes, also includes an assembly for manual actuation of the main brake control valve thus permitting emergency braking, pulsating braking and use of the system as a parking brake.

3,834,768

DISTRIBUTOR HEAD FOR SILO FILL PIPE

Henry S. Stoltzfus, Mount Joy, and John S. Stoltzfus, Lancaster, both of Pa., assignors to Lancaster Level-Flo Inc., Lancaster, Pa.

Continuation-in-part of Ser. No. 166,055, July 26, 1971, abandoned. This application Apr. 6, 1972, Ser. No. 241,511
Int. Cl. B65g *53/52, 53/42*
U.S. Cl. 302—60 8 Claims



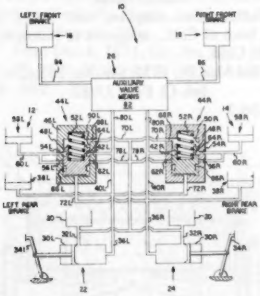
A distributor head for attachment to the delivery end of a silo fill pipe and operable to spread and disperse a blown stream of silage material into a plurality of streams in a manner to spread the delivery evenly over substantially the entire cross-sectional area of a silo by means of curved deflector vanes and members attached to a base plate which is pivotally connected to bracket means on the outer end of a gooseneck shaped conduit of a silo fill pipe. The fill pipe also is provided with means to center the blown stream relative to said distributor head.

3,834,769

BRAKING SYSTEM FOR VEHICLES

Jerome O. Just, Sturtevant, Wis., assignor to J. I. Case Company, Racine, Wis.

Filed Sept. 17, 1973, Ser. No. 398,199
Int. Cl. B60t *13/10*
U.S. Cl. 303—6 R 6 Claims



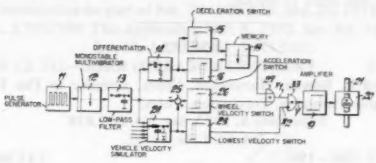
A braking system for a heavy duty vehicle is disclosed herein. The braking system includes left and right rear brakes with individual hydraulic circuits for each brake and the circuits are arranged so that a first braking force for each of the brakes is produced when both circuits are pressurized and a second braking force that is substantially greater than the first braking force for each brake is developed when only one circuit is pressurized while the other circuit is connected to the reservoir. The braking system also incorporates left and right front brakes which are simultaneously actuated when both left and right rear brakes are actuated.

3,834,770

SAFETY ARRANGEMENT FOR PROTECTING AGAINST THE LOCKING OF WHEELS IN MOTOR VEHICLES

Helmut Fleischer; Eberhard Schnaibel, both of Stuttgart, and Helmut Domann, Leonberg, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Nov. 17, 1971, Ser. No. 199,580
Claims priority, application Germany, Nov. 18, 1970, 2056621
Int. Cl. B60t *8/08*
U.S. Cl. 303—21 P 10 Claims



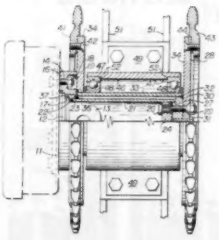
An arrangement for safely protecting against the stoppage of a wheel while driving on a road surface in a vehicle. A signal generator provides an electrical alternating current signal having a frequency proportional to the angular velocity of a wheel of the vehicle. A low pass filter connected to the output of the signal generator converts the alternating current signal into a first DC signal having a magnitude which varies in accordance with variations in the frequency of the alternating current signal. A pressure reducing valve connected in the braking line is used to regulate the intensity of the braking by being operated through an amplifier which, in turn, is connected to a comparator. An integrator in the comparator provides a second DC signal which depends on the angular velocity of a wheel of the vehicle. A threshold switch also within the comparator is connected to the integrator and receives the second DC signal.

3,834,771

TRACK LAYING ATTACHMENT TO WHEELS HAVING PROTRUDING HUBS

Harold S. Firstenberg, 131 Townsend St., Redwood City, Calif. 94107

Filed Nov. 7, 1973, Ser. No. 413,443
Int. Cl. B62d *55/04*
U.S. Cl. 305—25 8 Claims



The wheels of certain vehicles, particularly those having 4-wheel drive, have hubs protruding axially. A track laying attachment for such vehicle replaces the wheel. The attachment comprises an inner part and an outer part. The inner part has a socketed hub shaped to fit against and be attached to the drive face of the wheel. An inner sleeve is welded to the hub in axial alignment therewith and carries a plug at its outer end. The outer part is installed over the inner part. It has a second sleeve dimensioned to fit outside the inner sleeve and has at its

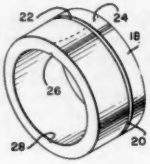
inner end an inner disk which fits flush against the hub. At the outer end of second sleeve is provided a collar which fits into the inner sleeve and abuts the plug and is detachably connected to the plug to hold the two parts assembled. The outer part also has an outer disk detachably connected to the collar. Inner and outer drive sprockets are attached to the inner and outer disks. Supporting the second sleeve and spaced therefrom by bearings is an outer sleeve bearing housing which is secured to a frame. The frame has appropriate bogie wheels and idler wheels at the ends of the track. The track fits around the inner and outer sprockets as well as the idler and bogie wheels and supports the vehicle. As the driving face turns, the track is driven.

3,834,772

FRACTURED BEARING RACE

Willard L. Bowen, Harwinton, Conn., assignor to The Torrington Company, Torrington, Conn.

Filed June 8, 1972, Ser. No. 260,838
Int. Cl. F16c *33/00*
U.S. Cl. 308—196 **14 Claims**



This is a new bearing race formed by fracturing the bearing by applying a concentrated force at a plurality of longitudinally spaced apart points on the bearing race.

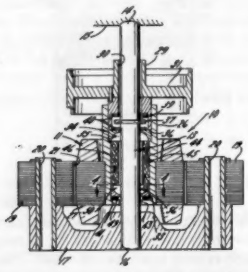
Preferably, three pressure applying members are used in the system to make the fractured race. One pressure applying member is located adjacent each longitudinal end of the bearing race to be fractured. The third pressure applying member is circumferentially spaced from the other two pressure applying members.

3,834,773

UNIT BEARING MOTOR

Gordon R. Anderson, Jr., Roscoe, Ill., assignor to Airtrol Corporation, Rockton, Ill.

Division of Ser. No. 241,703, April 6, 1972, Pat. No. 3,763,386. This application June 13, 1973, Ser. No. 369,565
Int. Cl. F16c *13/02*
U.S. Cl. 308—132 **2 Claims**



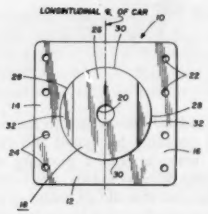
The rotor of a shaded-pole motor includes a central housing supported on a stationary shaft by two axially spaced sleeve bearings which are lubricated by an oil impregnated tubular liner telescoped into the housing and sandwiched between the inboard faces of the bearings. The bearings include a pair of slanted passageways extending through portions thereof from the inner walls of the bearings adjacent the shaft to the inboard faces so that the outer surface of the shaft is in communication with the liner. As the bearings rotate, oil bleeding along the shaft accumulates in the passageways and, by virtue of the centrifugal force generated by the rotating bearing, is slung through the passageways and back to the liner to prevent the oil from leaking out of the housing.

3,834,774

CENTER PLATE BEARING

David Elmer Fiegl, Depew, N.Y., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed June 27, 1973, Ser. No. 374,194
Int. Cl. B61f *5/16*; **F16c** *17/04*, *17/12*
U.S. Cl. 308—137 **6 Claims**



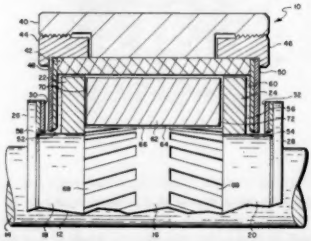
A center plate for use with a railroad car body bolster center sill assembly having a wear indicator on the circular boss portion in the form of a longitudinal recess extending from front to rear on each circumferential side thereof. The recess is of a cross section to cause the inner edge to remain spaced from the circumferential edge during the complete indicated wear life of the center plate to prevent an increase in the load concentration factor during lateral roll action.

3,834,775

FERROHYDRODYNAMIC LOW-FRICTION BEARING WITH IMPROVED VOLUME COMPENSATION AND FLUID SEAL

Robert H. Tuffias, Los Angeles, and Harry D. Larson, Northridge, both of Calif., assignors to Litton Systems Inc., Beverly Hills, Calif.

Filed May 26, 1972, Ser. No. 257,434
Int. Cl. F16c *33/82*
U.S. Cl. 308—36.3 **13 Claims**



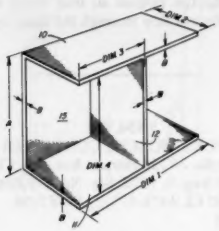
A self-contained, full film hydrodynamic bearing is provided having a ferrofluid (colloidal suspension of magnetic particles) with magnetic properties which facilitates retention of the fluid within the bearing where the bearing retains the ferrofluid over a wide temperature range and concomitantly compensates for ferrofluid expansion and contraction.

3,834,776

FURNITURE MODULE AND FURNITURE ITEMS RESULTING FROM MODULE COMBINATIONS

William S. Becker, Jr., 730 Linden Ave., Wilmette, Ill.

Filed June 22, 1972, Ser. No. 265,321
Int. Cl. F16b *12/00*
U.S. Cl. 312—108 2 Claims



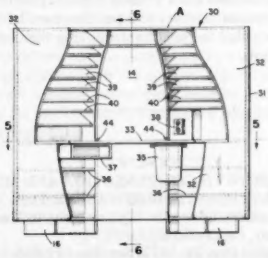
This invention relates to a novel furniture module and to furniture items obtainable with the use of such modules. The basic module consists of a generally I-shaped unit provided with a backing wall. By proportioning the module portions as set forth in equations, various items of furniture may be obtained from combining any one of a number of modules. The individual modules may be in one piece of plastic or other moldable material or may be built up from flat panels of wood or plastic suitably united to provide a module structure. The various panels which are used to make a module when made from individual pieces may be cemented or may be attached in any other suitable fashion as by screws or by slip interlocking fit. Preferably, locking clips having a general shape of a T with a laterally extending piece may be provided for use in assembling modules to lock them in position. Various items of furniture such as tables, chairs, bookcases, cabinets and the like may be made by using the modules in different relations. An important feature of the new module resides in its susceptibility to interfitting a number of modules into a package whose dimensions are of the same order as a module.

3,834,777

ARTICLE STORING AND DISPENSING MODULE

Earl S. Swensson, Nashville, Tenn., assignor to The University of Mississippi, University, Miss.

Filed Dec. 6, 1971, Ser. No. 205,192
Int. Cl. A47b *81/00*; A61b *19/02*; A47b *5/00*
U.S. Cl. 312—209 4 Claims



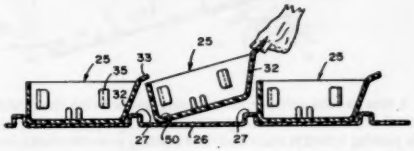
An article storing and dispensing module having an arcuate body portion and including a plurality of adjustable, vertically spaced, inwardly and downwardly inclined shelves with the upper shelves progressively extending further inwardly than the intermediate shelves to facilitate access thereto. A plurality of arcuate sections combined together form a generally circular body portion defining an interior central work area and having shelving, counters, and at least one dispensing window. Doors opening on the outside of the body portion permit the shelves to be easily filled. A canopy extends out from the top of the body portion above the dispensing window and has wall means extending downwardly therefrom to form a dispensing booth in front of the window.

3,834,778

MEDICINE TRAY FOR CABINET DRAWER

Robert B. Morrison, North Muskegon, Mich., and Lewis C. Wyman, Norwalk, Conn., assignors to E. H. Sheldon and Company, Muskegon, Mich.

Continuation-in-part of Ser. No. 109,823, Jan. 26, 1971, Pat. No. 3,708,709. This application Dec. 6, 1972, Ser. No. 312,581
Int. Cl. A47b *88/00*; B01l *3/00*
U.S. Cl. 312—209 1 Claim



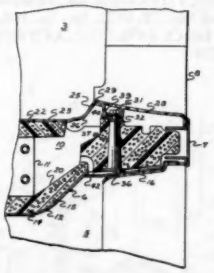
A plastic liner tray is removably carried in a nurse's cabinet cart and is provided with integral raised and spaced ribs supporting individual patient medicine trays and a hypodermic needle tray.

3,834,779

REFRIGERATOR CABINET

Roger C. Turner, and Michael L. Simms, both of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Filed July 9, 1973, Ser. No. 377,329
Int. Cl. A47b *81/00*; F25d *11/00*; B65d *25/18*
U.S. Cl. 312—214 6 Claims



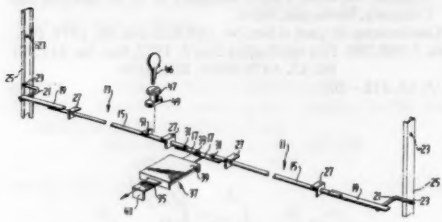
A refrigerator cabinet comprising a storage compartment, an evaporator chamber below the storage compartment including a recessed foamed plastic body supporting an evaporator and a removable plastic sheet member forming the cover for the evaporator chamber and the bottom wall of the storage compartment includes a breaker strip overlapping and securing the front edge of the sheet member and anchoring means embedded in the foamed plastic body for anchoring the breaker strip.

3,834,780

MECHANISM FOR SECURING AND LOCKING THE POSTING BOARD OF A MECHANIZED FILING CABINET

Amos E. McClellan, and Donald E. Daugherty, both of Marietta, Ohio, assignors to Sperry Rand Corporation, New York, N.Y.

Filed Oct. 11, 1972, Ser. No. 296,557
Int. Cl. F05b 65/46; E05b 65/44
U.S. Cl. 312—219 5 Claims



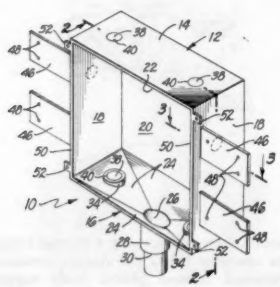
A mechanism suitable for securing and locking the posting board of a mechanized filing cabinet having a position adjustable posting board is disclosed. The posting board is maintained at a desired elevation by a pair of locking rods that normally project outwardly through apertures in the frame of the filing cabinet. When it is desired to change the position of the posting board, a release handle is moved outwardly. Movement of the release handle outwardly moves the locking rods inwardly and allows the posting board to be manually raised or lowered to a different elevation. Release of the handle allows the locking rods to move outwardly and project through apertures adjacent the new position. A key operated locking mechanism prevents the inward movement of the locking rods to prevent the position change of the posting board when desired. In addition, an alternate embodiment of the invention includes, for security purposes, a pair of additional shoot bolts operated by the locking rods. If desired, a combination lock mechanism can be utilized with the mechanism of the invention to further improve security.

3,834,781

WASHING MACHINE CONNECTION STRUCTURE

Duane D. Logsdon, 1719 Canyon Rd., Fullerton, Calif. 92631

Filed Nov. 29, 1972, Ser. No. 310,577
Int. Cl. A47b 77/06; A47f 9/00
U.S. Cl. 312—229 4 Claims



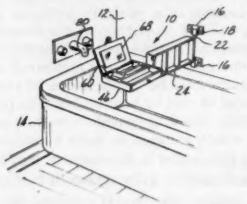
A washing machine connection structure can be manufactured so as to include a box-like cabinet having a front opening, a bottom shaped as a funnel so as to lead to a drain opening forming a part of the bottom, a pipe extension leading from this drain opening and internally extending outlet openings located above the bottom. The cabinet preferably carries means enabling it to be mounted in a wall between support members such as studs. When so mounted pipes may be inserted through the outlet opening and connected to the valves or faucets located within the cabinet. Water connections to a washing machine or the like may be made to such valves and a drain tube or hose from such machine may be inserted directly into the bottom so that waste water flowing through such a tube will flow through the drain opening.

3,834,782

TOILET ARTICLE CONTAINER

Albert N. Pampinella, 38228 Harper Ave., Mt. Clement, Mich.

Filed Aug. 9, 1972, Ser. No. 279,006
Int. Cl. A47b 67/02; A47f 5/08
U.S. Cl. 312—248 10 Claims



A rectangularly shaped container having a cover to permit access to its interior which, in turn, has partitions dividing the same into at least one section adapted to hold water, while the other sections thereof are adapted to store toilet articles and the like. A bracket support fixedly attached to a wall paralleling the longitudinal axis of a bathtub is provided with means for pivotally mounting a bracket adapted for movement between a first position wherein the bracket parallels the wall and a second position wherein the bracket extends outwardly from the wall and transversely of the longitudinal axis of the bathtub. The container is carried at the extended other end of the bracket in such a manner that the container is rotatable with respect to the bracket support so that the open face of the container may be rotated between a horizontal position permitting access therein and a vertical position permitting movement of the bracket member to a position parallel to the wall. Means are provided for selectively locking the container in a selected position.

3,834,783

THERMAL GROWTH COMPENSATION AND MOUNTING FOR PLASTIC DISHWASHER TUB

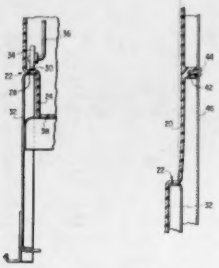
Thomas E. Jenkins, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Dec. 29, 1972, Ser. No. 319,555
Int. Cl. A47b 96/00
U.S. Cl. 312—253 6 Claims

The lower sidewalls of a unipartite, plastic dishwasher tub are formed with integral ledges or horizontal walls which perform a dual load support function, viz. that of supporting the tub on a base assembly and providing a lower dishwasher rack support track.

Compensation for thermal growth of the tub walls inwardly

of the wash chamber is achieved by incorporating a deliberate, outward bow into the tub walls. This is accomplished, in the



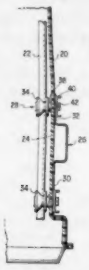
case of the lower, top and back walls by molding the same with an unstressed outward bow while the unstressed, planar sidewalls are deformed mechanically.

3,834,784

PLASTIC TUB WALL ALIGNMENT FOR DISHWASHING RACK MOUNTING

Richard L. Butsch, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Dec. 29, 1972, Ser. No. 319,199
Int. Cl. A47b *96/00*
U.S. Cl. 312—350 **4 Claims**



The sidewalls of a front loading, unipartite dishwasher tub molding are necessarily formed with a rearward draft to permit part removal from the forming mold core section.

The disclosure is directed to a dishwasher assemblage wherein the forward portions of the rearwardly drafted sidewalls are deformed into parallelism by clamping the same into backing relation with the upright legs of a tub support frame whereby tandem roller pairs may be anchored to the upright legs for the cantilever support of parallel, dishwasher rack supporting tracks.

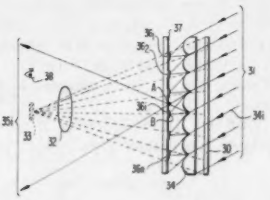
3,834,785

VERTICALLY DIVERGED HOLOGRAPHIC IMAGE FORMATION WITH ZERO-ORDER DIFFRACTION SUPPRESSION

Yoshiaki Kimura, Marsanori Kawai, Tokyo, Japan, assignor to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Jan. 24, 1973, Ser. No. 326,351
Claims priority, application Japan, Jan. 24, 1972, 47-8301; Mar. 15, 1972, 47-25756
Int. Cl. G02b *27/00*
U.S. Cl. 350—3.5 **6 Claims**

In a holographic image formation apparatus and method it has been known that the vertical components of image may be spread to achieve a wide vertical angle of observation without destroying the image nor impairing the three dimensional effect obtainable with a pair of eyes arranged horizontally with respect to each other. This has been done by the employment of a horizontally disposed cylindrical lens plate, usually near the plane of the recorded image, but optionally arranged elsewhere. Overlapping and loss of image clarity and contrast occurs in such a system due to the fact that the zero order of diffracted images and the first, or higher, orders partially superimpose one upon the other. In this invention a special mask is arranged beyond the lens plate which may be adjacent the



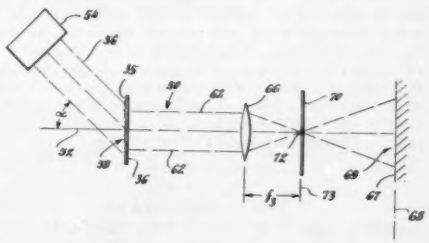
recorded image to be reconstructed, in which the mask has opaque zones which correspond to the spacing of the individual cylindrical lens elements comprising a lens plate used for the vertical dispersion of the lines of images along the recorded image. According to this invention narrow opaque strips are disposed parallel to these cylindrical lens elements at a distance therefrom such that the elumination beam passing linearly through the recorded image tends to focus on the opaque strips whereas the first and higher order diffraction beams pass between such opaque strips, whether illuminated by monochromatic light or a series of color bands.

3,834,786

METHOD AND APPARATUS FOR RECORDING AND PROJECTING HOLOGRAMS

W. John Carlsen, New York, N.Y., assignor to General Telephone of Electronics Laboratories Incorporated, New York, N.Y.

Filed May 1, 1972, Ser. No. 249,324
Int. Cl. G02b *27/00*
U.S. Cl. 350—3.5 **3 Claims**



A method and apparatus for recording and projecting single color or multiple color encoded image-plane carrier holograms are described. An object is illuminated with a coherent collimated laser beam. The parallel spatially modulated rays are focused on a monochrome recording medium located in a recording plane with the rays maintained essentially parallel. A collimated reference beam, which is coherent with the object beam, is directed at the recording medium to form an image-plane hologram having a single discrete spatial carrier frequency in case of a single color laser or additional spatial carrier frequencies for as many colors as are in the laser. The

processed image-plane hologram is projected by directing a generally collimated beam of incoherent white light upon the hologram to form separated wavefront reconstructions of parallel rays. A lens projects the parallel rays in a viewing plane after their convergence at a focal spot in a focal plane. A spatial filter located in the focal plane provides selection of desired color images and blocks undesired ghosts. A control for moving and adjustment of the spatial filter is provided to attain hue and saturation control as well as brightness of the projected image. An embodiment for recording of image-plane holograms of diffuse objects or diffusely illuminated objects as well as three-dimensional objects is described.

3,834,787

METHOD AND APPARATUS FOR MAKING HOLOGRAPHY MEMORY

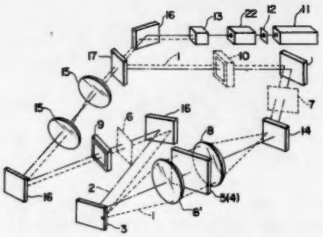
Yoshitada Oshida, Tokyo, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Sept. 18, 1972, Ser. No. 289,650

Claims priority, application Japan, Sept. 18, 1971, 46-72675

Int. Cl. G02b *27/00*

U.S. Cl. 350—3.5 **18 Claims**



A holography memory, wherein a number of holograms are formed on a predetermined hologram recording medium by the use of reference light beam illuminated at a predetermined angle and an object light beam transmitted through a spatial modulator which causes a phase shift in the transmitted light, and wherein, in order to clearly produce all the reconstructed hologram images at the same position, means to control the quantities of exposure is provided in the optical path of the transmitted light of the spatial modulator, whereby changes in the transmission factor of the spatial modulator which occur when a light beam obliquely incident thereon is transmitted through the spatial modulator, so as to diminish noises generated in the reconstructed hologram images.

3,834,788

EPICYCLIC CAMERA

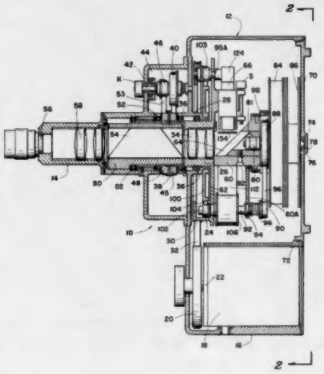
Rouel R. Campbell, 7064 E. 52nd, Tulsa, Okla. 74145

Filed Aug. 13, 1973, Ser. No. 387,957

Int. Cl. G03b *41/00*

U.S. Cl. 352—84 **21 Claims**

A high speed motion picture camera wherein the film moves continuously during a filming operation, and having an optical system of novel design through which the light passes continuously; hence the epicyclic camera principle in which the film, the shutter and the image are in coordinated motion. The film supply reel is of a diameter substantially equal to the stationary gear whereby the supply reel does not rotate as the camera accelerates, and the film unwraps as it follows the path of a planet sprocket. The film take-up reel operates on the same principle as the supply reel, but the take-up reel is driven and the acceleration is reduced by one revolution for each revolution of the epicyclic. The film may be made to move at the



same rate as the image during expsoure, or for taking substantially any number of pictures per revolution with good picture quality and superior picture steadiness.

3,834,789

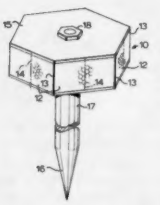
REFLECTING DEVICE

Peter E. Brudy, Willowdale, Ontario, Canada, assignor to Dominion Auto Accessories Limited, Toronto, Ontario, Canada

Filed Feb. 2, 1973, Ser. No. 329,185

Int. Cl. G02b *5/12*

U.S. Cl. 350—97 **14 Claims**



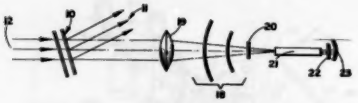
A reflecting device having a plurality of angularly related faces providing 360° reflectivity. The device is made from a single blank of plastic material having opposed surfaces, one of which is relatively smooth and the other of which is formed with cube corner reflectors. The blank comprises sections which are integrally connected at their ends to one another with grooves extending from the surface having the reflector prisms. The blank is heated and folded to bring the side walls of the grooves into abutting relation where they are welded by ultrasonics and thereby adhered or joined to one another. The blank further includes integral smooth portions that are folded downwardly in a similar fashion and joined to the side edges of the sections to provide a completely enclosed evacuated construction. Provision may be made for passage of a fastening device through the reflecting device for holding the reflecting device on a roadway or the like.

3,834,790

CUMULATIVE OPTICAL FREQUENCY SHIFTER

John A. Macken, Orange, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed June 28, 1972, Ser. No. 266,929
Int. Cl. G02b 1/24
U.S. Cl. 350—157 17 Claims



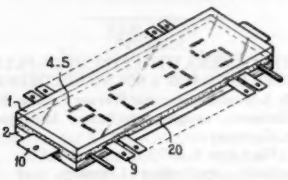
A means for obtaining large cumulative high optical frequency shifts at efficient microwave driving power levels utilizing Fabry-Perot interferometers.

3,834,791

LIQUID CRYSTAL DISPLAY DEVICES AND METHODS OF MANUFACTURING SUCH DEVICES

Pierre Lucien Raimbault, Courbevoie, France, assignor to L.C.C.-C.I.C.E. Compagnie Europeenne de Composants, Montreuil-Sous-Bois, France

Filed May 29, 1973, Ser. No. 364,281
Int. Cl. G02f 1/16
U.S. Cl. 350—160 LC 3 Claims



Improvements in or relating to liquid crystal display devices, to enable simple, efficient and economical manufacture of such devices.

Tongues cut from a metal strip whose thickness is equivalent to that of the desired liquid crystal film, and inserted between the plates and boarded by a seal delimiting such film, are responsible both for determining the spacing between said plates and for providing connection of the electrodes within and outside said plates.

The invention applies to the field of data display equipment.

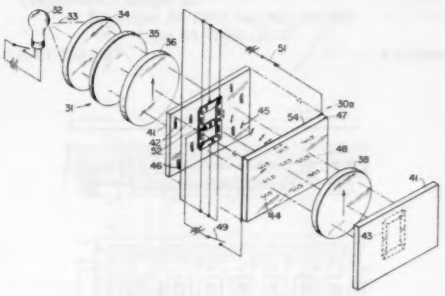
3,834,792

ALIGNMENT FILM FOR A LIQUID CRYSTAL DISPLAY CELL

John L. Janning, Dayton, Ohio, assignor to The National Cash Register Company, Dayton, Ohio

Continuation of Ser. No. 242,675, April 10, 1972, abandoned.
This application Aug. 7, 1973, Ser. No. 386,472
Int. Cl. G02f 1/16
U.S. Cl. 350—160 LC 7 Claims

The present invention relates to a liquid crystal display cell having an alignment film therein. The present invention also relates to a method of aligning liquid crystal molecules in a selected direction in a liquid crystal display cell. An alignment film whose film growth is oriented in the same direction is deposited on an electrode film of a liquid crystal cell. The alignment film is used to align the molecules of a liquid crystal material. The film growth sympathetically aligns the molecules of liquid crystals in the direction of the film growth.



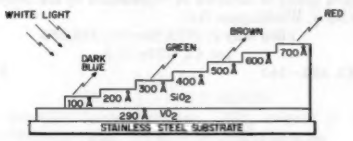
A liquid crystal display cell which has two such alignment films therein is used to form a polarizing liquid crystal display cell.

3,834,793

DICHROMIC MIRROR HAVING MULTILAYER THIN FILMS INCLUDING VANADIUM DIOXIDE

Lloyd T. McConnell, Dallas, and John R. Trimmier, Arlington, both of Tex., assignors to Advance Technology Center, Inc., Dallas, Tex.

Filed June 21, 1973, Ser. No. 372,378
Int. Cl. G02f 1/28
U.S. Cl. 350—160 R 7 Claims



An optical effect device in the form of a multi-layer mirror, with at least one layer consisting of vanadium dioxide, and the layers being limited in thickness to about 2,000 Angstroms such that interference effects can provide essentially any desired color. Methods are disclosed for determining what two colors are achievable with a given mirror as the VO_2 is carried through its transition temperature, and methods are disclosed for optimizing the contrast in reflectance between the mirror in its hot and cold states.

3,834,794

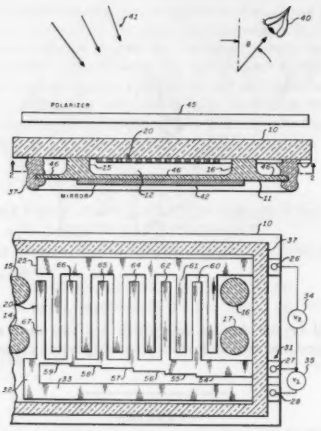
LIQUID CRYSTAL ELECTRIC FIELD SENSING MEASUREMENT AND DISPLAY DEVICE

Richard A. Soref, Chestnut Hill, Mass., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed June 28, 1973, Ser. No. 374,460
Int. Cl. G02f 1/28
U.S. Cl. 350—160 LC 10 Claims

A flat panel, electric field controlled device is provided for the measurement and display of electrical parameters such as voltage, the voltage sensing effect being provided by a nematic liquid crystal medium having high positive dielectric anisotropy and placed in a thin flat-sided optically transparent cell. Optical transmission of the nematic liquid crystal medium is controlled by voltages applied to interdigital arrays of parallel electrode elements affixed on the inner surface of only one

of the transparent parallel cell walls. Continuous relative changes in the respective potentials applied to the electrode



arrays provide continuous analog movement of the borders between birefringent and non-birefringent areas formed in the liquid crystal medium.

3,834,795

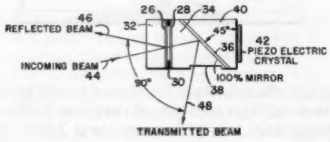
DIRECT VISION LASER RANGE GATE SYSTEM

Allen M. Erickson; Robert L. Kaplow, both of Silver Spring, and W. Lawton King, Adelphi, all of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 2, 1973, Ser. No. 356,556

Int. Cl. G01c *3/08*

U.S. Cl. 350—161 **5 Claims**



A range gate system to permit direct visual observation through visual obstructions having a laser which illuminates with a series of light pulses and develops a signal to initiate an electrical delay equal to the time required for the pulse to travel to and return from an obscured object. The delay activates a pulse generator to produce an electroacoustic shock wave which opens and closes a Fabry-Perot visual shutter for a period of nanoseconds to permit the object reflection to pass through to the observer's eyes.

3,834,796

AUTO ZOOM DEVICE FOR A MOTION PICTURE CAMERA

Yoshio Komine, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

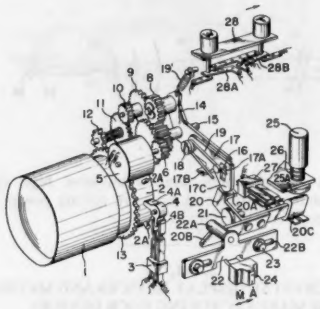
Filed Sept. 6, 1973, Ser. No. 394,649

Claims priority, application Japan, Sept. 6, 1972, 42-89215

Int. Cl. G02b *15/00*

U.S. Cl. 350—187 **5 Claims**

An auto zoom device for a motion-picture camera which can make a changeover from auto zoom by an electric motor to manual zoom. The auto zoom device comprises engaging-and-disengaging means provided between a rotating member driven by an electric motor and a zoom-lens tube rotating member driven by the first mentioned rotating member, a changeover member which permits a changeover between auto zoom and manual zoom, a rotating lever for shifting the



engaging-and-disengaging means between an operative and inoperative positions in an interlocking relationship with the changeover member, and quick zoom-up operating means cooperable with the rotating lever independently of the changeover member, thereby permitting quick zoom-up in either state, auto zoom or manual zoom.

3,834,797

MOVIE CAMERA WITH SYNCHRON PULSE GENERATOR FOR A SOUND RECORDER

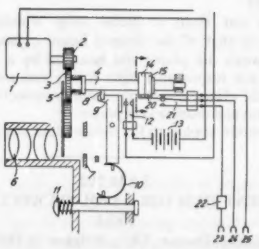
Johann Roth, Schwabhausen, and Werner Grimm, Emmering, both of Germany, assignors to Braun Aktiengesellschaft, Frankfurt, Germany

Filed Apr. 9, 1973, Ser. No. 349,475

Claims priority, application Germany, Apr. 8, 1972, 2217036

Int. Cl. G03b *31/00*

U.S. Cl. 352—12 **13 Claims**



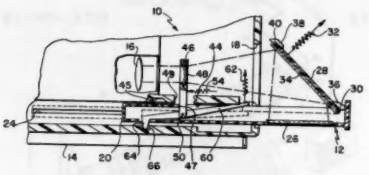
A movie camera having a synchron pulse generator adapted for delivering synchron pulses for controlling the synchronized operation of an associated sound recording device during the running of the movie camera, a releaser for controlling the operation of the movie camera, a switch coupled to the releaser for effecting delivery and interruption of the signals from the synchron pulse generator, a sensing device controlling the switch and being responsive to the acceleration or numbers of revolutions of the film advancing mechanism.

3,834,798

VIEWING SCREEN FOR MOTION PICTURE PROJECTORS

John J. Bundschuh, and William H. Goddard, both of 901 Elmgrove Rd., Rochester, N.Y. 14650

Filed Dec. 20, 1972, Ser. No. 316,777
Int. Cl. G03b *21/10*
U.S. Cl. 352—104 **9 Claims**



A slide-out viewing screen for a motion picture projector. A slidable frame is carried by the projector and a negative lens, mirror and rear projection viewing screen are mounted on the frame. The negative lens and the mirror are pivotably supported by the frame and are movable from a stored position to an operative position when the frame is moved from a stored position to a viewing position. Through an interaction between the mirror and the negative lens and the projector housing, the mirror and negative lens will be positioned in their stored position when the frame is in its stored position.

ERRATUM

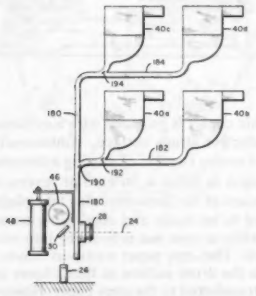
For Class 352—84 see:
Patent No. 3,834,788

3,834,799

MICROFICHE STORAGE AND DISPLAY UNIT

Robert L. Blosser, Bountiful, and William D. Cranney, Granger, both of Utah, assignors to Sperry Rand Corporation, New York, N.Y.

Continuation of Ser. No. 71,534, Sept. 11, 1970, abandoned.
This application July 17, 1972, Ser. No. 272,233
Int. Cl. G03b *23/08*; **B65h** *29/24*
U.S. Cl. 353—27 **11 Claims**



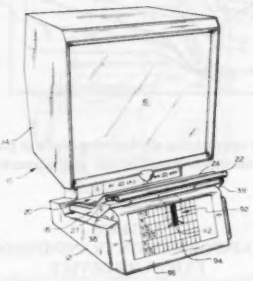
A fluidic system for transporting a selected one of a plurality of microfiche from a storage cassette into position in an X-Y positioner for projection upon a viewing screen and return to the storage cassette. Air jets position the microfiche in the X-Y positioner during the positioning operation.

3,834,800

PROJECTOR VIEWER WITH INDICATING DEVICE

Philip J. Brownscombe, Millington, N.J., assignor to Dietzen Corporation, Chicago, Ill.

Filed Apr. 30, 1973, Ser. No. 355,590
Int. Cl. G03b *23/08*
U.S. Cl. 353—27 **6 Claims**



A projector viewer adapted to read microfiche transparencies through a projection onto a screen with an indicator device embodying a transparent sheet with index markings. A longitudinally flexible, laterally rigid transparent strip is connected to a carriage assembly which bears the microfiche between glass plates. The strip moves behind the transparent sheet and bears position indicating means coordinating the index markings with the respective frames of the microfiche.

3,834,801

REFLECTIVE ELEMENTS

Jay G. Schreckendgust, Columbus, Ohio, assignor to A. E. Staley Manufacturing Company, Decatur, Ill.

Filed Sept. 21, 1970, Ser. No. 74,120
Int. Cl. G03b *21/00*
U.S. Cl. 353—20 **5 Claims**

Projection of an image from a transparent photographic element onto a screen without deterioration or destruction of the transparent photographic element, by projecting a beam of light through a transparent photographic element bearing reflective image areas.

3,834,802

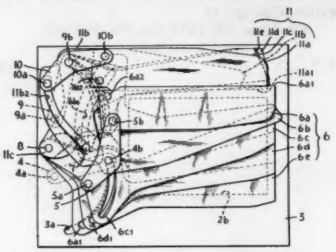
SHUTTER BLADE OPERATION MECHANISM FOR FOCAL PLANE SHUTTER

Kiyoshi Kitai, Tokyo; Eiichi Onda, Saitama; Mitsuo Koyama; Shinji Nagaoka, and Tadashi Nakagawa, all of Chiba, Japan, assignors to Seiko Koki Kabushiki Kaisha, Tokyo, Japan

Filed May 14, 1973, Ser. No. 359,876
Claims priority, application Japan, May 16, 1972, 47-56318
Int. Cl. G03b *9/36, 9/44*
U.S. Cl. 354—246 **5 Claims**

A focal plane shutter having a set or group of shutter-opening shutter blades and a set or group of shutter-closing shutter blades each consisting of a plurality of shutter blades for opening a shutter exposure aperture and closing it. Driving mechanism is provided for each group with a driving main lever supported on one side of the exposure aperture. A shutter blade operating auxiliary lever is supported on a corresponding one of the driving main levers and one end of this

auxiliary lever is rotatably connected with a slit-forming shutter blade and a slot guides the travel of this end of the auxiliary lever to operate the slit-forming blade in parallel motion to define a uniform rectangular slit as the aperture is opened and closed.

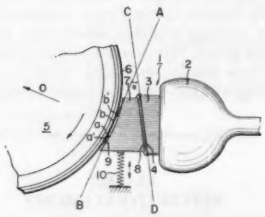


3,834,803

PHOTO-INFORMATION TRANSMISSION AND EXPOSURE DEVICE

Syusei Tsukada, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 2, 1973, Ser. No. 346,922
Int. Cl. G03b *27/10*
U.S. Cl. 355—1 **18 Claims**



A photo-information transmission and exposure device applicable to various types of electrophotographic copying apparatus using a photosensitive medium comprises a photo-information source, an optical fiber plate or bundle secured to the photo-information source, and a movable intermediate optical fiber plate or bundle disposed so as to transmit the photo-information passed from the photo-information source through the fixed optical fiber plate or bundle to the surface of the photosensitive medium to expose that surface to the photo-information. The intermediate optical fiber plate or bundle has its photo-information inlet and outlet faces opposed to the photo-information outlet face of the fixed optical fiber plate or bundle and the surface of the photosensitive medium, respectively.

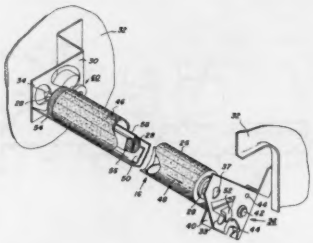
3,834,804

COPYING MACHINE WITH MEANS FOR MOUNTING CARRIER BEAD PICKOFF ROLLER THEREIN

Gopal C. Bhagat, Rochester, and George E. Veillard, Fairport, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 6, 1972, Ser. No. 312,404
Int. Cl. G03g *15/00*
U.S. Cl. 355—3 R **2 Claims**

An electrostatic copying machine having an endless belt mounted for movement around a closed path has a cylindrical roller rotatably mounted immediately adjacent the surface of the belt. Because it is important that the roller be capable of being removed and precisely replaced in its original position without contacting the surface of the belt, the roller is mounted so that it can be released and guided out of the machine, and then guided back into its original mounted position where it is again secured. A shaft extends through the roller, the shaft having a tapered portion on one end of the roller, the other end being supported by a removably mounted bracket. By removing the bracket, the roller is released, and can then be guided by the tapered portion into a receptacle beneath the roller. The roller and receptacle are then guided away from the belt through a trough which supports the receptacle. When replacing the roller the procedure is reversed, the brackets being precisely relocated via guide pins, thus precisely relocating the roller in its original mounted position.

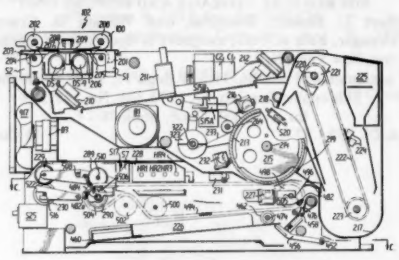


3,834,805

XEROGRAPHIC COPIER WITH ASYNCHRONOUS COPY FEED

B. Franklin Griffin, Jr., Lansdale, Pa., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Jan. 29, 1973, Ser. No. 327,405
Int. Cl. G03b *15/00*
U.S. Cl. 355—8 **9 Claims**



A xerographic copier is provided with a continuously rotating photoconductive drum surface, continuously operative document feed means capable of moving a document through a scanning station in either a forward or reverse direction so that multiple scans of the document may take place when multiple copies are to be made, and copy paper transport means which is normally at rest but is brought into motion during each copy cycle. The copy paper transport moves as the same linear speed as the drum surface so that a toner image on the drum may be transferred to the copy paper. However, since all document images are not placed on the drum at the same area, the time at which the copy paper transport begins moving is not synchronized with any particular point in the drum cycle but is instead synchronized with the document image formed on the drum surface. The original document actuates switches which in turn control the time at which the copy paper transport begins its movement. Since document movement is

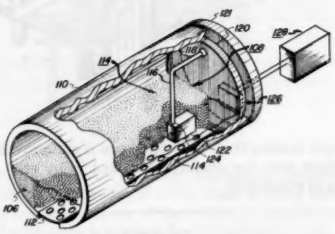
synchronized with drum surface movement, this provides synchronization between the copy paper feed and the image on the drum.

3,834,806

PARTICLE LEVEL INDICATOR

Charles A. Whited, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed May 7, 1973, Ser. No. 357,995
Int. Cl. G03g *15/08*
U.S. Cl. 355—3 DD **6 Claims**



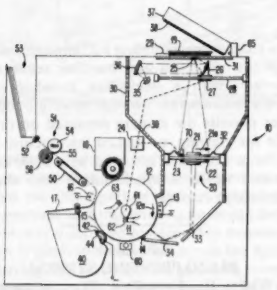
An apparatus arranged to indicate the level of particles remaining in a housing. The housing dispenses particles therefrom, and the apparatus senses when the particle level is diminished beneath a preselected level. In this manner, additional particles may be added to the housing when the apparatus indicates that the particles therein are depleted.

3,834,807

COPIER WITH LEADING EDGE IMAGE CONTROL

Sterritt Ray Fuller; Howard Everett Munzel, and Carl Allen Queener, all of Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 14, 1974, Ser. No. 442,533
Int. Cl. G03g *15/00*
U.S. Cl. 355—3 R **4 Claims**



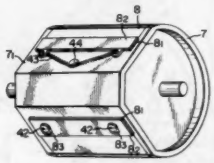
An image producing process of a document copier is controlled by means detecting a low average intensity of reflected light during initial stages of scan of an original being copied to produce a low density or light copy adjacent the leading edge of the copy sheet passing through the machine thereby minimizing paper feed difficulties associated with the passage of copy having a dense leading edge through a contact fuser.

3,834,808

ELECTRONIC PHOTOGRAPHIC COPYING MACHINE

Isao Takahashi, Yokohama; Motoharu Fujii, Tokyo; Kazuo Kawakubo, Tokyo; Masao Ariga, Tokyo, and Susumu Sugiura, Yamato, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 211,276, Dec. 23, 1973. This application July 23, 1973, Ser. No. 381,400
Int. Cl. G03g *15/00*
U.S. Cl. 355—3 R **1 Claim**



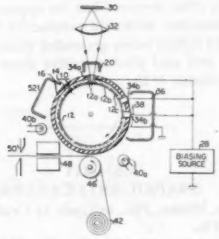
In an electrostatic photocopying machine, a drum having an axially extending notched portion, and a photosensitive sheet attached to the drum by a clamping device disposed in the notched portion of the drum. The clamping device includes an elastic member for resiliently holding the photosensitive sheet on the drum.

3,834,809

ELECTROPHOTOGRAPHIC SYSTEM

Michio Yoshizawa, and Masaru Ohnishi, both of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed July 26, 1973, Ser. No. 382,643
Claims priority, application Japan, Aug. 4, 1972, 47-78150
Int. Cl. G03g *15/00, 15/08*
U.S. Cl. 355—3 R **5 Claims**



A photosensitive member is composed of an electrode layer, a photoconductive layer responsive to visible light and an ultraviolet photoconductive, electrically insulating layer. The photoconductive layer is irradiated by visible light from an object to be reproduced simultaneously with the negative corona charging of the electrically insulating layer to form an electrostatic latent image on the latter. At the same time, a positive voltage is applied to the electrode layer. The application of this voltage can also be accomplished during dry development of the image.

3,834,810

ELECTROSTATIC LATENT IMAGE TRANSFERRING APPARATUS FOR USE IN ELECTROPHOTOGRAPHY

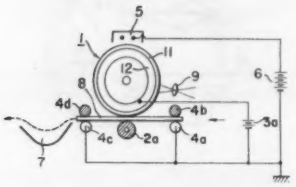
Junji Kurokawa; Toshio Watanabe, and Tomiaki Asami, all of Tokyo, Japan, assignors to Kabushiki Kaisha Ricoh, Tokyo, Japan

Filed Nov. 19, 1973, Ser. No. 416,732

Claims priority, application Japan, Nov. 21, 1972, 47-116212

Int. Cl. G03g *15/22*

U.S. Cl. 355—3 R **6 Claims**



An electrophotographic apparatus for transferring electrostatic latent images comprising a photosensitive drum consisting of a layer of photosensitive material on a conductive body; an insulating roller normally disposed in contact with said photosensitive drum for the purpose of transferring an electrostatic latent image formed on said layer of photosensitive material to an interposable electrostatic transfer paper consisting of a conductive paper support with an image receiving dielectric layer thereon; at least one set of paper feed rollers disposed in front of and one set disposed to the rear of said insulating roller (the rollers disposed on the side of said dielectric layer consisting of an insulating material while the rollers disposed on the side of said paper support consist of a conductive material) for feeding the electrostatic transfer paper in between said insulating roller and photosensitive drum; and a low-voltage DC power source having one terminal with the same polarity as that of the electric charge to be impressed on the photosensitive layer by corona discharge, and electrically connected with said conductive body of the photosensitive drum, while the other terminal has the opposite polarity and is electrically connected with said conductive feed rollers, said conductive feed rollers being grounded through the chassis of the apparatus and said photosensitive drum being insulated relative to the chassis of the apparatus.

3,834,811

GRAPHIC ARTS CAMERA

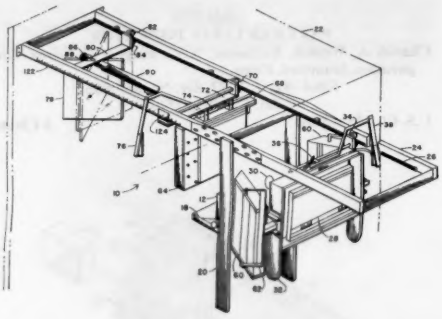
Paul Rathburn, Miami, Fla., assignor to Craft Camera Corp., Opa Locka, Fla.

Filed June 20, 1973, Ser. No. 371,669

Int. Cl. G03b *27/32, 27/60, 27/70*

U.S. Cl. 355—18 **8 Claims**

A graphic arts camera constructed according to the present invention includes a copyboard, lens with bellows, a film holder and a light image reflector disposed in vertically extending parallel planes and spaced longitudinally apart. The film holder and the light image reflector are pivotally mounted on frames having rollers engaging a pair of overhead tracks for traveling thereon. The film holder is adapted to be adjustably positioned from its parallel wrong reading position with respect to the copyboard and lens to an angular right reading position thereto in conjunction with the light image reflector also adjustably positioned angularly with respect thereto for reflecting the light image of the subject copy from the copyboard through the lens on the film mounted on the film holder



for a right reading shot. The copyboard is also provided with a drop down door for loading film when being used for back lighting or projection.

3,834,812

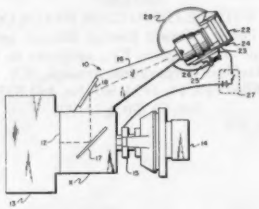
OSCILLOSCOPE CAMERA 35MM FILM RECORDER ADAPTER

James R. Adamson, Jr., Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 23, 1973, Ser. No. 418,802

Int. Cl. G01d *9/42*

U.S. Cl. 355—46 **1 Claim**



A camera adapter for mounting a 25mm camera on an oscilloscope camera hood. An arm member secures the 35mm camera thereon with a sleeve-like member securing the adapter to the oscilloscope camera viewing hood. A ball detent retainer permits the camera mounted on the arm to be swung aside for viewing, or locked into picture-taking position. The 35mm camera is actuated by a cable release and a rotary solenoid which is synchronized with the electronic shutter of the scope camera.

3,834,813

DIAZO PRINTING SYSTEM

Russell P. White, Jr., Carrollton, Tex., assignor to Haggar Company, Dallas, Tex.

Division of Ser. No. 80,829, Oct. 15, 1970. This application June 5, 1972, Ser. No. 260,007

Int. Cl. G03b *27/48*

U.S. Cl. 355—50 **1 Claim**

A diazo printing system comprises a source of ultraviolet radiation and an optical system including lenses that are transparent to ultraviolet radiation. The optical system directs radiation generated by the source through an intermediate, and focuses an enlarged or reduced image of the intermediate

on a diazo layer. In accordance with the preferred embodiment of the invention, the diazo printing system is employed in a garment layout system that further includes a system for recording the image of an array of miniature garment patterns

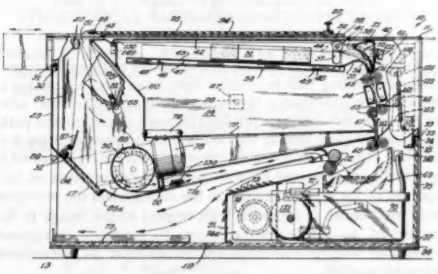
and thereby forming an optically enlargeable intermediate. The intermediate is employed in the diazo printing system to form a full size reproduction of the miniature patterns and the full size reproduction is employed in the cutting of cloth.

3,834,814

BOOK COPIER

David F. Wolff, Glenn Ellyn; Herman O. De Boer, Wheaton; Emil Tiger, Highland Park, and James G. McCarthy, Park Ridge, all of Ill., assignors to Sunbeam Business Equipment Co., Addison, Ill.

Filed Mar. 27, 1969, Ser. No. 810,968
Int. Cl. G03b *27/70*
U.S. Cl. 355—51 **32 Claims**



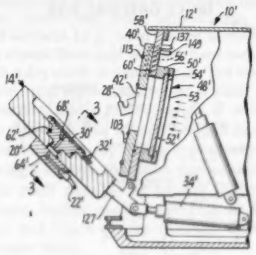
A book copier including a cabinet having an upwardly opening exposure aperture with illuminating means within the cabinet trained into the aperture and an optical system for scanning the aperture and transmitting an image therefrom to a copy element, has a carriage reciprocably mounted thereon to transport an original to be scanned across the aperture, and means for driving the carriage reciprocably comprising a coupling rack reciprocable with the carriage and respective driving gears alternatively operable on the rack to drive it and thereby the carriage in respective opposite direction. An electrically operated means controlled by the copy element synchronizes operations and the driving means with movements of the copy element past an exposure aperture. A multiple copy selector is arranged to be manually set to control the driving means for repeating reciprocations of the carriage for production of multiple copies and the carriage cycles the selector means by a trip arm on the carriage operating a selector cycling lever system.

3,834,815

PHOTOCOPYING APPARATUS WITH VACUUM MEANS

Alfred L. Greig, Cupertino, Calif., assignor to IPT Corporation, Sunnyvale, Calif.

Filed July 6, 1973, Ser. No. 367,852
Int. Cl. G03b *27/20*
U.S. Cl. 355—91 **1 Claim**



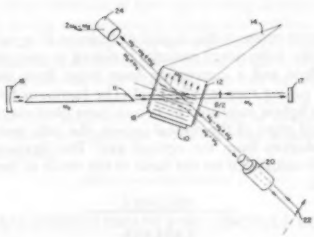
A device for duplicating a high resolution master transparency onto a photosensitive copy sheet wherein both are placed in a spaced apart relation within a vacuum chamber while the pressure within the chamber is reduced to a very low level significantly less than that of atmospheric pressure. The master transparency and the photocopy sheet are then mechanically urged together followed by a light exposure of the photocopy sheet through the master transparency. Air bubbles do not form between the master transparency and the photocopy sheet with the result of much better copies being made. The photocopy sheet and the master transparency are made ready for exposure in a very short period of time.

3,834,816

COLINEAR HETERODYNE FREQUENCY MODULATOR

Melvin E. Pedinoff, Canoga Park, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Division of Ser. No. 97,003, Dec. 10, 1970, Pat. No. 3,735,279, which is a continuation of Ser. No. 646,867, June 19, 1967, abandoned. This application Nov. 14, 1972, Ser. No. 306,476
Int. Cl. G01p *3/36*
U.S. Cl. 356—28 **9 Claims**

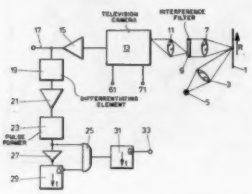


An apparatus to produce Brillouin scattering by means of two oppositely directed colinear optical beams, frequency-translated and of varying power level, in a time sequence suitable for processing doppler-shifted radar target echoes by means of a simplified optical heterodyne detection system.

3,834,817
METHOD AND APPARATUS FOR RECOGNIZING COLORS

Antonius Vinnemann, Stuttgart, and Joachim Merz, Leinfelden, both of Germany, assignors to Firma Franz Morat GmbH, Stuttgart, Germany

Filed Aug. 9, 1972, Ser. No. 279,025
Claims priority, application Germany, Aug. 18, 1971, 2141364
Int. Cl. G01j *3/42, 3/48*
U.S. Cl. 356—83 **28 Claims**

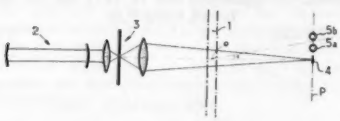


A method of scanning and/or distinguishing colors comprising opto-electrically scanning the colors, generating electrical signals the time variation of which correspond to the spectral intensity distribution of the colors and distinguishing the colors by automatically determining the position of the maxima of the electrical signals.

3,834,818
CONTINUOUS MEASUREMENT OF THE FINENESS OF A PULVERULENT MATERIAL

Jean Paul Meric, Paris, France, assignor to Centre D'Etudes Et De Recherches De L'Industrie Des Liants Hydrauliques, Paris, France

Filed Mar. 26, 1973, Ser. No. 345,199
Claims priority, application France, Mar. 29, 1972, 72.11018
Int. Cl. G01n *15/02, 21/00, 1/00*
U.S. Cl. 356—102 **13 Claims**



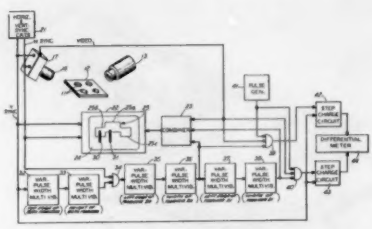
In order to measure the degree of fineness of a pulverulent material, the pulverulent material is placed in suspension in a gaseous fluid and a converging laser beam from an optical source is passed through the fluid. The luminous flux of the diffracted light is measured by two or more photoelectric cells in the focal plane of the optical system, the cells being at different distances from the optical axis. The fineness of the material is calculated on the basis of the result of these measurements.

3,834,819
THICKNESS MEASURING

Liber J. Montone, Reading, Pa., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed July 5, 1973, Ser. No. 376,640
Int. Cl. H04n *7/02*; **G01b** *9/04*
U.S. Cl. 356—156 **15 Claims**

The thickness of an object is measured with great accuracy by scanning with a television camera a light-section microscope image of the object and its support, electronically generating markers which extend at least partially into the televised images of support and object, respectively, and

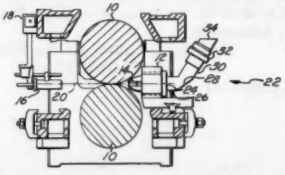


determining the difference in the number of scanning lines by which the respective markers so extend into the image. This difference represents the object thickness.

3,834,820
OPTICAL GAUGE

Nils Erik Bock, Smedjebacken, Sweden, assignor to Morgardshammar AB, Smedjebacken, Sweden

Filed Feb. 5, 1973, Ser. No. 329,837
Claims priority, application Sweden, Feb. 7, 1972, 1380/72
Int. Cl. G01b *9/08*
U.S. Cl. 356—164 **11 Claims**



An optical gauge for use in measuring the setting of grooved rolls of a rolling mill receives a light beam through a space between the rolls from a light source located on the other side of the rolls and conducts the light through a bent optical path to a ground glass display located in a convenient position for viewing. A manually movable rule mechanism cooperates with a scale on the ground glass to permit measurements of the spacing of the rolls as imaged on the display, and the movable rule mechanism is rotatable with respect to the image to be measured, to enable measurements to be made in various directions without relocating the image from its convenient viewing position.

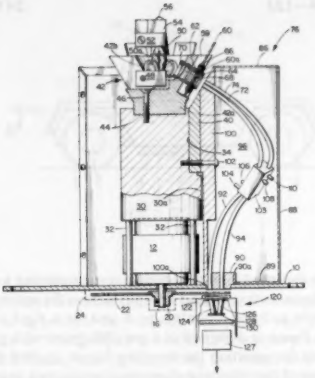
3,834,821
MULTIPLE PHOTOMETER ASSEMBLY

Andres Ferrari, Dover; Leo J. Blumle, Milton, and Laurence C. Bonar, Brighton, all of Mass., assignors to Damon Corporation, Needham Heights, Mass.

Filed Jan. 12, 1971, Ser. No. 105,822
Int. Cl. G01j *3/46*
U.S. Cl. 356—181 **24 Claims**

A novel photometer assembly which may be used in the ultra-violet region of the spectrum is disclosed. The assembly includes a single energy source and chopper assembly both of which service multiple photometer modules and therefore multiple optical paths. The photometer modules which are preferably of the double beam type including a reference and a sample beam, include fiber optical elements conducting radiation to and receiving radiation from a novel cuvette in which liquid samples may be received. The reference channel

includes a cuvette with a reference fluid therein or may be simply a continuous fiber optical element. The radiation from each channel is chopped by a common chopper disk and supplied to a detector. A photometer module for differential



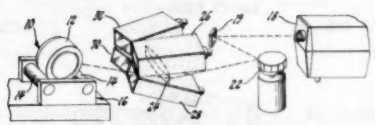
photometry is described. Energy from the single source passes through the two channels and then is chopped at different frequencies before being recombined to fall on a single detector at a single location.

3,834,822

METHOD AND APPARATUS FOR SURFACE DEFECT DETECTION USING DETECTION OF NON-SYMMETRICAL PATTERNS OF NON-SPECULARLY REFLECTED LIGHT

Thomas T. Stapleton, Bloomfield Hills, and Reed A. Farrar, Southfield, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Mar. 29, 1973, Ser. No. 345,959
Int. Cl. G01n *21/16, 21/48*
U.S. Cl. 356—200 **5 Claims**



A cylindrical metal object to be inspected for surface defects is rotated about its axis and a collimated laser beam is axially scanned across the object surface in a plane normal to the surface. A plurality of photoelectric detectors are symmetrically arranged on each side of the scanning plant to detect light non-specularly reflected from the object. Defects causing an unsymmetrical reflection to the detectors are sensed by summing the outputs of symmetrically disposed pairs of detectors and comparing the summed outputs to determine significant differences in the summed outputs and producing a defect signal when such differences occur.

3,834,823

MARKING BOARDS AND ERASABLE INK COMPOSITIONS THEREFOR

Daniel E. Seregely, Los Angeles, and Bernard G. Kidda, Marina del Ray, both of Calif., assignors to The Gillette Company, Santa Monica, Calif.

Filed May 25, 1972, Ser. No. 256,818
Int. Cl. B43k *29/00*; **C09d** *11/16*
U.S. Cl. 401—198 **15 Claims**

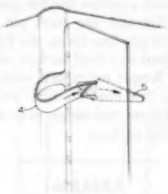
An ink composition for writing instruments having a porous writing point, which will write satisfactorily on relatively smooth, hard surfaces (e.g., solid plastic surfaces) and which can easily be erased from said smooth, hard surfaces by merely wiping with a dry cloth or paper tissue. The ink composition contains, as essential ingredients, water, a water soluble dye, a silicone surfactant, and a release agent in which the water soluble dye is insoluble. The ink composition may also contain a wax to prevent dusting. An erasing system including a marking board having a smooth, hard, non-porous surface of plastic and a porous point pen having an ink therein which will deposit uniform, legible traces, markings or lines on said plastic surface and which can be removed therefrom with a dry cloth or paper tissue.

3,834,824

RETAINING MEANS

Gerhard Jahn, Apt. 1907 655 Broadview Ave., Toronto, Ontario, Canada

Filed Sept. 18, 1972, Ser. No. 289,820
Int. Cl. B42f *13/02*
U.S. Cl. 402—13 **12 Claims**



The invention is a retaining means used to retain discrete articles thereon and in particular is adaptable to be used as a loose leaf binder to retain paper in a simple and inexpensive manner, and comprises a backing and fastening means, each fastening means comprising a thin narrow bendable strap and a tab on one end thereof forming a continuation of the plane of the adjacent strap and of a width at the juncture with the strap to define therewith at least one locking shoulder, the tab and strap having an appreciable measure of stiffness to resist buckling under force applied to the edges thereof substantially in the plane thereof, the backing having a tab receiving and co-operating slot through which the tab can be inserted to lock the at least one shoulder behind the backing to resist withdrawal until sufficient force is exerted to buckle the tab out of its planar configuration when the strap is pulled in the reverse direction.

3,834,825

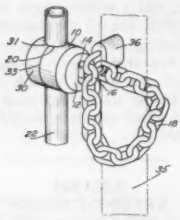
CHAIN ANCHORING MEANS FOR A BICYCLE LOCK OR THE LIKE

Normand A. Dubois, 39 Samoset Ave., Providence, R.I., and Gary R. Skeen, Warwick, R.I., assignors to said Dubois, by said Skeen

Filed Mar. 13, 1973, Ser. No. 340,751
Int. Cl. F16g *15/00*
U.S. Cl. 403—378 **8 Claims**

A link chain secured to a first base member. A second base member is provided, the two members defining an opening

through which a bar, such as that of a bicycle frame, extends. When the members are clamped to the bar, the chain is locked thereto. The chain can then be used to lock the bicycle wheel or lock the frame to a stanchion. The chain is anchored to the base member by providing the latter with a central oblong opening therethrough adapted to receive the end link of the chain. On its rear side, the member is provided with a recess into which the end link extends. A second oblong recess extends in from the first recess at right angles to the chain opening. A steel pin can be loosely positioned in the second oblong recess. The end link is passed inwardly through the oblong



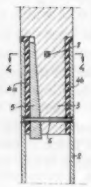
opening as far as it will go and then the steel pin is passed through the link and dropped into the oblong recess. The base members are then secured to each other with the bar clamped therebetween, in which position the bar prevents the end link from moving inwardly and the steel pin prevents outward movement thereof. In another form, the first base member is adapted to be mounted to a wall surface whereby the second base member is no longer necessary, although the structure and operation of the first base member remains basically the same. In this second form, the object is to attach one end of a chain securely to a wall surface.

3,834,826

JOINT ASSEMBLY FOR STRIKING TOOL

Ludger Simond, Les Bassons, Chamonix-Mont-Blanc, France

Filed June 11, 1973, Ser. No. 368,705
Int. Cl. B25g *3/28*
U.S. Cl. 403—374 **2 Claims**



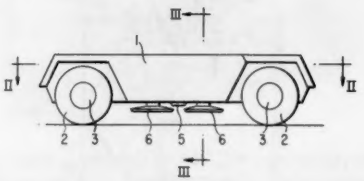
This tool, notably in the case of an ice ax comprising a tool head formed with a depending shank and a metal tubular handle of substantially elliptic or oval cross-sectional configuration receiving said shank in its upper portion, comprises between said shank and said tubular handle upper portion a pair of half sockets associated with a wedge member; driving this wedge member between one of said half-sockets and the shank permits of locking the assembly, this locking action being reinforced by two rivets axially spaced along the handle axis and extending at right angles to each other.

3,834,827

VEHICLE MOUNTED VIBRATORY COMPACTOR

Albert Linz, Julweg 40, Hoffnungsthal/Cologne, Germany

Filed Sept. 8, 1971, Ser. No. 178,567
Claims priority, application Germany, Sept. 23, 1970, 2046840
Int. Cl. E01c *19/34*
U.S. Cl. 404—133 **24 Claims**



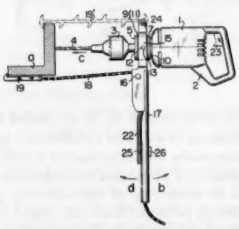
A vehicle mounted vibratory compactor employing a pair of vibrating elements that extend laterally across the entire width of the vehicle and are mounted, as a unit, in a rigid support frame. The frame is designed as a parallelogram with parallel control arms for resisting the bending forces applied thereto by the action of the vibrating elements compressing materials, such as soils of all types, and the reactive forces of the materials. The frame is movable vertically within guides defined on the vehicle so that the vibrating elements can be elevated sufficiently to avoid contacting road obstacles as the vehicle is moved to the work site, and lowered variable amounts to alter the amplitude of the movement of the vibrating elements. The magnitude of the compression forces exerted by the vibrating elements is varied considerably by the utilization of diverse combinations of springs, reciprocal plates, pressure limit valves, pneumatic servomechanisms, pistons, and the like, which determine the natural frequency of the compactor system and thus control the resonant frequencies at which the maximum compressive forces are produced. The vibrating elements, which may assume the form of plates, rollers, beams or shoes, may be fabricated from a plurality of simplified components. If desired, "sheepsfoot" projections may be formed on the bottom surface of the vibrating elements.

3,834,828

ELECTRIC DRILL HOLDER

Yukio Kikuchi, No. 15-10, 5-chome, Tateishi, Katsushika-ku, Tokyo, Japan

Filed Feb. 16, 1973, Ser. No. 333,349
Claims priority, application Japan, Feb. 19, 1972, 47-17584
Int. Cl. B23b *45/14*
U.S. Cl. 408—92 **6 Claims**



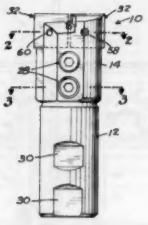
Disclosed is an electric drill holder which provides a lever function in association with the electric drill, thus enabling one to apply a multiplied force to the drill bit in operation.

3,834,829

TOOL HOLDER FOR INDEXABLE CUTTING INSERTS

Gerald Kirk Munro, Detroit, Mich., assignor to Gorham Tool Company, Detroit, Mich.

Filed Aug. 20, 1973, Ser. No. 389,709
Int. Cl. B23b 29/034
U.S. Cl. 408—179 12 Claims



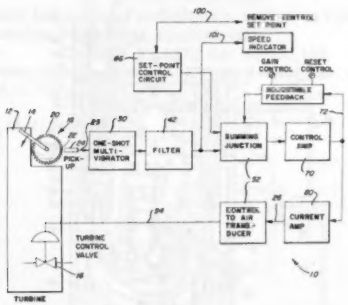
A tool holder having two diametrically opposed indexable cutting inserts mounted thereon. Each insert is retained on the holder in a pocket, the radially inner end wall of which is formed as a radially flexible blade. Two screws are associated with each insert, one for displacing the insert and flexing the blade radially inwardly and the other for flexing the blade and displacing the insert radially outwardly.

3,834,830

ELECTRONIC SPEED GOVERNOR FOR A TURBINE

Allan W. Johncock, Texas City, Tex., assignor to Standard Oil Company, Chicago, Ill.

Filed Mar. 9, 1973, Ser. No. 339,533
Int. Cl. F01b 25/06
U.S. Cl. 415—30 11 Claims



An improved electronic speed governor for a turbine wherein the speed of the turbine is controlled by the output of a pneumatic transducer and wherein the pneumatic transducer includes a hollow housing having enclosed therein the entire circuitry for the electronic speed governor.

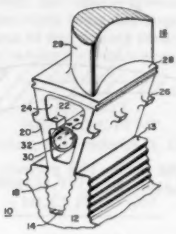
3,834,831

BLADE SHANK COOLING ARRANGEMENT

Ernest L. Mitchell, Springfield, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 23, 1973, Ser. No. 325,968
Int. Cl. F01d 5/18
U.S. Cl. 416—95 7 Claims

In a gas turbine engine, an arrangement for cooling turbine blade shanks for gas turbines, wherein a perforated chamber is arranged to cause a cooling fluid to impinge with a predetermined pattern upon inner wall surfaces of a cavity in a shank portion of a turbine blade and/or the outer walls of adjacent



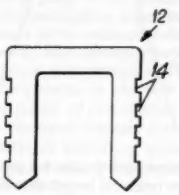
blade shanks. The cooling fluid may escape through radially directed passageways within the turbine blade or through a space between the adjacent blade platforms.

3,834,832

FIBRE REINFORCED COMPOSITE STRUCTURES

Frederick Paul Mallinder, Southport, and Clifford George Hannah, Alvaston, both of England, assignors to Rolls-Royce (1971) Limited, London, England

Filed Dec. 14, 1972, Ser. No. 315,194
Claims priority, application Great Britain, Dec. 21, 1971, 59488/71
Int. Cl. F01d 5/14
U.S. Cl. 416—230 9 Claims



A fibre reinforced composite structure has two or more layers of fibre reinforced material, the layers being bonded together to provide resistance to delamination by fastening devices which extend transversely of the fibres from the fibre reinforced layers. The fastening devices may be stitches of glass, carbon or boron, metal pins or staples. The metal pins or staples may be etched or notched to increase the surface area. The composite structure is particularly suitable for use as a fan blade for the fan of a by pass type gas turbine engine.

3,834,833

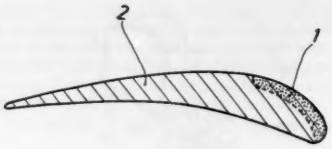
BLADE CONSTRUCTION FOR AXIAL-FLOW TURBO-MACHINES AND METHOD OF PROTECTING TURBO-MACHINE BLADES AGAINST STRESS CORROSION CRACKING

Guy Faber, Oberrohrdorf, and Carlo Maggi, Baden, both of Switzerland, assignors to Brown, Boveri & Company Ltd., Baden, Switzerland

Filed Feb. 16, 1973, Ser. No. 333,156
Claims priority, application Switzerland, Feb. 18, 1972, 2373/72
Int. Cl. F01d 5/28
U.S. Cl. 416—241 2 Claims

A steel blade for an axial-flow turbo-machine is disclosed which has a hardened leading edge portion. In accordance

with the invention, the hardened edge portion is imparted with a permanent compressive prestress in the direction of the lon-



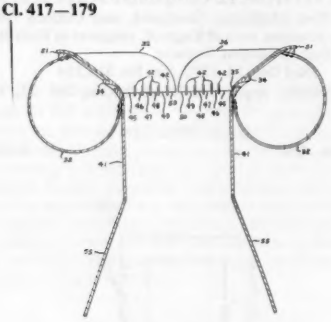
gitudinal axis of the blade. This protects the blade against stress corrosion cracking.

3,834,834

COMPACT HIGH THRUST AUGMENTATION EJECTOR SYSTEM

Brian P. Quinn, Dayton, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Mar. 7, 1973, Ser. No. 338,726
Int. Cl. F04f *5/46, 5/44*
U.S. Cl. 417—179 **3 Claims**



A thrust augmentation system having thrust augmentation channels with the reservoir length absorbed in the inlet length and with a plurality of root nozzles positioned at the inlet to mixing duct transition region together with a plurality of hypermixing nozzles extending substantially across the width of the ejector duct.

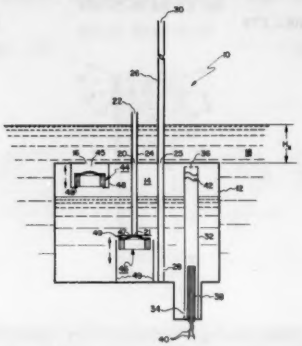
3,834,835

DOUBLE VALVE VAPOR PUSH PUMP

Heinz Jaster, Schenectady; Philip G. Kosky, and Fred W. Staub, both of Scotia, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 29, 1972, Ser. No. 310,437
Int. Cl. F04b *19/24;* **F04f** *1/18*
U.S. Cl. 417—209 **4 Claims**

Disclosed is a vapor push pump having a housing adapted to be immersed in a liquid to be pumped. Within the housing a chamber is defined; the chamber communicates with the liquid outside the housing via a port provided in the housing. A heater in the chamber vaporizes some of the liquid admitted to the chamber through said port. Vapor pressure in the chamber forces (pushes) the liquid through a liquid delivery conduit, passing through the housing, to a location outside the housing and above the level of the liquid in which the housing is immersed. A buoyant first valve body moves and closes, or opens, said port, as a function of the head of liquid outside the housing, the weight of the first valve body, the level of liquid in the chamber and the vapor pressure in the chamber and surface tension. Also provided is a vapor vent conduit passing through said housing to vent vapor in the chamber to a location outside the housing and above the external liquid level. A buoyant second valve body within the chamber moves to close or open the vapor vent conduit as a function of the weight of the second valve body, the level of liquid in the chamber and the vapor pressure in the chamber and surface tension. Also, the first valve body is caused to open abruptly when the second valve body operates to vent the vapor pressure from the chamber.

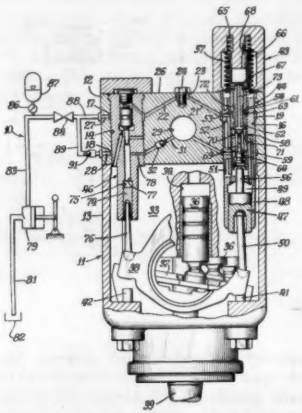


3,834,836

OVERRIDE CONTROL FOR A VARIABLE DISPLACEMENT PUMP

Allyn J. Hein, Joliet, and Vergil P. Hendrickson, Decatur, both of Ill., assignors to Caterpillar Tractor, Peoria, Ill.

Filed Mar. 1, 1973, Ser. No. 336,941
Int. Cl. F04b *1/26*
U.S. Cl. 417—222 **2 Claims**

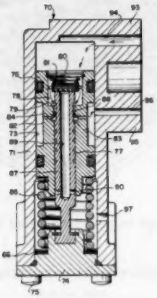


An override control, for a variable displacement pump having an actuator system which shifts the pump between a maximum displacement condition and a minimum displacement condition with the actuator system having a control device responsive to a primary source of pressurized fluid which is dependent upon operation of a prime mover drivingly connected to the pump, including a passage in communication with the actuator system and a secondary source of pressurized fluid selectively connectable to the passage and operable independently of the prime mover to override the control device causing the actuator system to shift the pump to one of the extreme displacement conditions.

3,834,837
AIR COMPRESSOR WITH GOVERNOR

Claude H. Nickell, Dearborn, Mich., assignor to Winfred D. Weldon, Detroit; Manuel Pinko and Adam Pianga, both of Dearborn, all of, Mich., part interest to each

Filed Feb. 27, 1973, Ser. No. 336,299
Int. Cl. F04b 49/08
U.S. Cl. 417—298 2 Claims

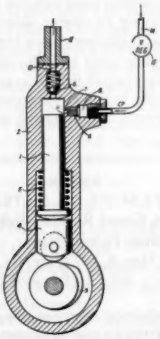


An air compressor apparatus for maintaining the air pressure in a reservoir within predetermined upper and lower limits. The air compressor is driven continuously but the compressing of air is intermittently cycled on and off automatically in response to pressure in the reservoir by means of a governor which is directly attached to the compressor. The governor includes apparatus for unloading the suction side of the compressor in direct response to fluid pressure in the pressure side of the compressor.

3,834,838
METHOD OF AN APPARATUS FOR FILLING A FUEL INJECTION PUMP

Jaromir Indra, Brno, Czechoslovakia, assignor to Vysoke uceni technicke v Brne, Brno, Czechoslovakia

Filed Mar. 22, 1972, Ser. No. 237,141
Claims priority, application Czechoslovakia, Mar. 24, 1971, 2128-71
Int. Cl. F04b 7/04, 39/10
U.S. Cl. 417—490 2 Claims

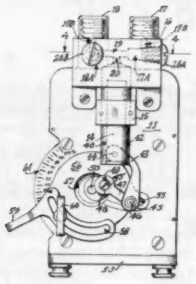


Method of and apparatus for filling a piston fuel injection pump of internal combustion engines with fuel. The fuel is fed through a side filling channel into a space over the piston which is under negative gauge pressure during the movement of said piston to its lower dead center, as well as during its movement toward its upper dead center until the filling channel is covered by the edge of the piston at the moment when there is still negative gauge pressure in the area above the piston. During the subsequent displacement of the piston to the upper dead center, the negative pressure in said space disappears and the fuel starts being discharged into the delivery conduit. The volume of fuel flowing through the filling channel is adjustable by varying the entering pressure of the fuel.

3,834,839
METERING PUMP

Frank Krebs, Glenview, and Frederick N. Zimmermann, Deerfield, both of Ill.

Filed Aug. 30, 1971, Ser. No. 175,842
Int. Cl. F04b 39/08
U.S. Cl. 417—505 8 Claims

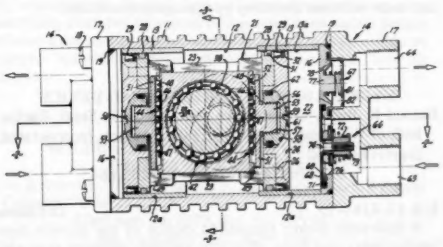


A precision metering pump of the positive-displacement type in which a variable-stroke drive means including a swivel lever permits adjustment of the volumetric displacement with a high degree of accuracy and constancy between zero and a maximum while the pump is in operation. The pump is self-priming and particularly useful in chemical processing and control operations by reason of construction of the cylinder and piston of highly corrosion-resistant ceramic and plastic materials, and provision of sensitively adjustable magnetic valve means eliminating metallic springs and parts subject to chemical action in a flow line.

3,834,840
COMPACT RECIPROCATING PISTON MACHINE

Ezra Dale Hartley, 2700 Jalmia Dr., Los Angeles, Calif. 90046

Filed June 7, 1972, Ser. No. 260,480
Int. Cl. F04b 25/00
U.S. Cl. 417—535 8 Claims



Reciprocating piston machine in which a yoke member reciprocates within a piston in a direction normal to the direction of piston movement. Roller bearings are provided between the yoke member and piston, and means is provided

for preloading the bearings and adjusting the position of the piston. A reversible sealing ring utilizes the pressure differential across the piston to enhance the seal in one direction, and each end of a double-ended piston can be operated in either a vacuum or a pressure mode.

3,834,841

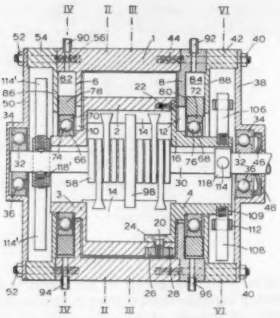
SYMMETRICAL ROTARY PUMP FOR A VARIABLE SPEED HYDROSTATIC TRANSMISSION

Fabrizio Falciai; Riccardo Falciai; Giuseppe Falciai, and Renzo Falciai, all of via Martelli 4, 50129, Florence, Italy

Continuation-in-part of Ser. No. 47,012, June 17, 1970, abandoned. This application Dec. 2, 1971, Ser. No. 204,281

Int. Cl. F01c *21/16;* **F03c** *3/00;* **F04c** *15/04*

U.S. Cl. 418—26 **4 Claims**



A symmetrical rotary pump is provided which includes a housing and a hollow cylindrical rotor mounted rotatably within the housing. The rotor has a main portion and an extension portion at each end thereof, both the extension portions being rotatably received in mounting means, so that the rotor is supported at both ends. The mounting means are movable radially of the axis of the rotor so as to move the rotor in a radial direction and hence change the eccentricity of the rotor. An input shaft extends longitudinally through the housing and through the interior of the rotor, and a plurality of vanes are freely pivoted on the input shaft, the vanes extending slidably through the main portion of the rotor. Transmission means connect the shaft and the rotor, and fluid is supplied to and removed from the pump by appropriate conduits.

3,834,842

HYDRAULIC POWER TRANSLATING DEVICE

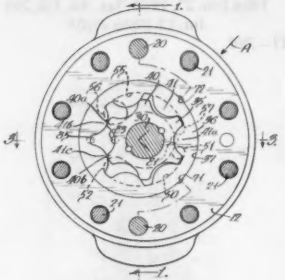
Donald R. Dorff, Union Grove, and Joseph A. Santi, Racine, both of Wis., assignors to Hydraulic Products Incorporated, Sturtevant, Wis.

Filed Dec. 6, 1971, Ser. No. 205,164

Int. Cl. F04c *29/00, 17/06*

U.S. Cl. 418—75 **10 Claims**

A hydraulic power translating device of the gerotor type having inner and outer rotatable partially meshing gear elements with a pressure fluid passage surrounding a major part of the exterior periphery of the outer gear element to obtain radial balance of the outer gear element upon start up in motor operation and with a plurality of recesses formed in the case of the device and at the cross-over areas which operate as fluid accumulators of limited capacity to reduce the noise of operation of the device as well as torque variations and to compensate for tolerance and natural frequency variations in



the mechanical structure and to also axially balance the gear elements.

3,834,843

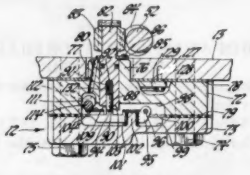
ROTARY ENGINE OIL METERING PUMP

Donald D. Stoltman, Henrietta, and Ernest R. Stettner, Spencerport, both of N.Y., assignors to General Motors Corporation, Detroit, Mich.

Filed Feb. 28, 1973, Ser. No. 336,883

Int. Cl. F04c *29/02;* **F04b** *19/02*

U.S. Cl. 418—84 **2 Claims**



An internal combustion rotary engine is provided with an oil metering pump having an engine driven pump shaft with a chamber and an axial plunger that is biased under the control of a cam on the pump shaft and also an engine throttle controlled cam to have a stroke that increases with increasing engine throttle opening to effect oil metering at a rate that increases with increasing engine speed and increasing throttle opening.

3,834,844

ROTARY ENGINE OIL METERING PUMP

Robert E. Morgan, Grand Rapids, Mich., assignor to General Motors Corporation, Detroit, Mich.

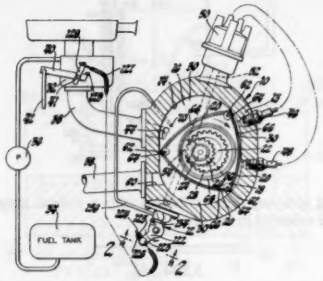
Filed Mar. 8, 1973, Ser. No. 339,393

Int. Cl. F04c *29/02*

U.S. Cl. 418—84 **3 Claims**

An internal combustion rotary engine is provided with an oil metering pump having an engine driven shaft with a chamber and an axial plunger that is spring biased to expand the chamber and is moved to contract the chamber by a follower that rotates with the pump shaft and operates against an engine throttle controlled roller to provide a plunger stroke that increases with increasing engine throttle opening and with the follower also having a timing port for periodically connecting an oil inlet port to the chamber during chamber expansion and

then connecting the chamber during contraction to an outlet port to effect oil metering for rotor seal lubrication at a rate



which increases with increasing engine speed and increasing throttle opening.

3,834,845

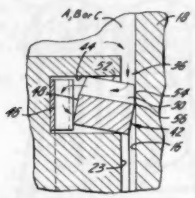
SIDE GAS SEAL MEANS FOR ROTARY MECHANISMS

Charles A. Siler, Menomonee Falls, Wis., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed May 2, 1973, Ser. No. 356,462

Int. Cl. F01c *19/00*; **F04c** *15/00, 27/00*

U.S. Cl. 418—142 **5 Claims**



The improved side gas seal comprises a seal strip disposed in a groove in the rotor face adjacent each of the flank portions of the rotor. The seal strip is resiliently biased in a direction outwardly of the groove by a spring means. The radially outer surface of the seal strip is provided with at least one recess for communicating the interstices between the rotor face and housing wall with the space between the bottom of the groove and the anti-seal side of the seal strip to thereby pass pressurized gas to the space behind the seal strip. This pressurized gas provides a force supplementing the force of the spring means acting against the seal strip and assists in urging the seal strip outwardly of the groove and into sealing abutment against the adjacent housing wall surface.

3,834,846

ROTOR SUPPORTING ARRANGEMENT FOR A COMPRESSOR

Ernst Linder, Muhlacker; Gerhard Adalbert, and Jurgen Hess, both of Markgroningen, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

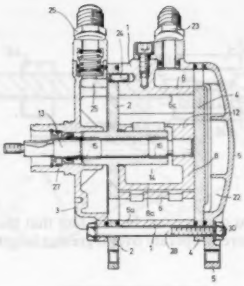
Filed May 11, 1973, Ser. No. 359,560

Claims priority, application Germany, May 12, 1972, 2223087

Int. Cl. F01c *1/00*

U.S. Cl. 418—255 **10 Claims**

A stationary pintle projects from one side of a housing into a housing cavity, and has two axially spaced bearing supporting a rotor which has a pot-shaped portion including an endless wall surrounding the pintle and closed by a bottom part to which a drive shaft portion of the rotor is secured. The bearings are either provided between the endless wall and the



outer surface of the pintle, or between the drive shaft portion and the inner surface of a tubular pintle. Preferably, the center of gravity of the rotor is located between the bearings.

3,834,847

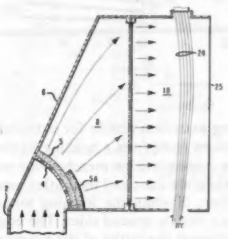
OPEN CELL FOAM DEVICE FOR GAS DISTRIBUTION IN FILAMENT QUENCHING CHIMNEYS

Eldon Lawrence Fletcher, Kingston, Ontario, Canada, assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 16, 1970, Ser. No. 3,314

Int. Cl. B29c *25/00*

U.S. Cl. 425—72 **1 Claim**



A chimney used for quenching synthetic filaments after they are extruded is divided into a plenum chamber and a quenching chamber by means of a porous open-celled polyurethane foam rather than a conventional screen assembly to improve quench medium distribution into the quench chamber.

3,834,848

MOLDING APPARATUS WITH CORE ROD OBSTRUCTION SENSORS

John J. Farrell, Green Brook, N.J., assignor to Farrell Patent Company, Dunellen, N.J.

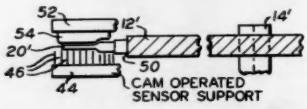
Filed Apr. 24, 1973, Ser. No. 353,962

Int. Cl. B29c *17/07*; **B29d** *1/00*

U.S. Cl. 425—136 **13 Claims**

Molding machines commonly have polygonal indexing heads with straight side faces from which core rods extend. Molded articles are stripped from the core rods at a stripping station; and sensing means beyond the stripping station detect any residual molding material that may not have been stripped. Upon detecting such material, the sensing means

cause the machine to stop before a mold at the next station closes on the residue on the core rod. This invention moves the sensing devices toward and from the axis of rotation of the



indexing head to compensate for the fact that the head is not round and to thereby operate over a greater length of the core rod.

3,834,849

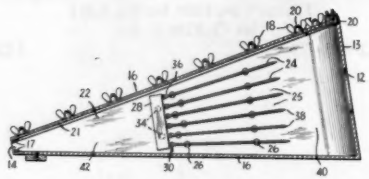
FIBER-ALIGNING EXTRUSION NOZZLE

Michael K. Supran, Hillsdale; Kantilal G. Parekh, Saddle Brook, and Leonids Berzins, Hamburg, all of N.J., assignors to Thomas J. Lipton, Inc., Englewood Cliffs, N.J.

Filed Dec. 13, 1972, Ser. No. 314,691

Int. Cl. B29c *1/00;* **A22c** *7/00*

U.S. Cl. 425—206 **12 Claims**



A fiber-aligning extrusion nozzle for extrudable, fiber containing compositions comprises a housing having an inlet and an outlet. One or more partition members are mounted within the housing between the inlet and the outlet, generally parallel to the axis of flow, dividing the housing longitudinally into passages that have closely spaced sides. The edge of each partition member adjacent the outlet of the housing is serrated to provide a plurality of teeth, adjacent teeth being inclined in opposite directions outwardly from the partition member. The partition members cause the formation of discrete streams of composition during extrusion and assist in aligning the fibers in the composition generally parallel to the axis of flow. The teeth disrupt at least the surface of the discrete streams causing them to recombine as a unitary mass at the outlet, while retaining the fibers therein in generally axial alignment. The edge of each partition member adjacent the inlet of the housing is sharpened to facilitate movement of the composition through the nozzle.

3,834,850

APPARATUS FOR AGGLOMERATING POWDERS

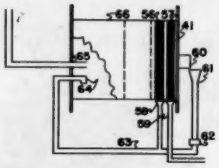
Robert B. Takewell, Borger, Tex.; Paul W. Brandon, Havre De Grace, Md., and Paul R. Odom, Macon, Ga., assignors to J. M. Huber Corporation, Locust, N.J.

Division of Ser. No. 186,113, Oct. 4, 1971. This application Mar. 11, 1974, Ser. No. 450,036

Int. Cl. B29b *1/03, 1/06;* **B01j** *2/12*

U.S. Cl. 425—222 **1 Claim**

A method and apparatus for agglomerating powders and non-flowing fine particle minerals such as clay, silicas, and silicates involving adding a slightly moist material to a rotating drum and spraying certain liquids into a critical area of the bed of the material in the drum.



3,834,851

ENDLESS BELT GUIDING MEANS FOR FEEDING MATERIAL INTO A SERIES OF MOLDS

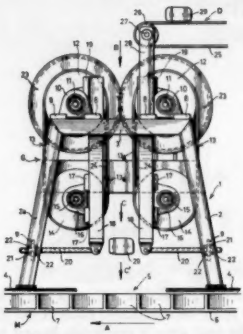
Hendrik Sinnema, Sneek, Netherlands, assignor to W. Hubert & Co. Machinefabriek N.V., Sneek, Netherlands

Filed May 31, 1972, Ser. No. 258,359

Claims priority, application Netherlands, June 1, 1971, 7107479

Int. Cl. B29b *5/00*

U.S. Cl. 425—261 **5 Claims**



Apparatus for the manufacturing of molded products from pre-formed clods of kneadable material in which the preformed clods are transported to a molding station, whereat molds are supplied in succession at a lower level. A stationary guide is disposed above the molds for receiving a clod and vertically guiding the same for discharge at a pre-determined velocity into a waiting mold where the clod substantially fills the mold of it own accord.

3,834,852

APPARATUS FOR FORMING BLOW MOLDED CONTAINER OF ORIENTED THERMOPLASTIC POLYMERS

John N. Hall, Newark, Del., assignor to Hercules Incorporated, Wilmington, Del.

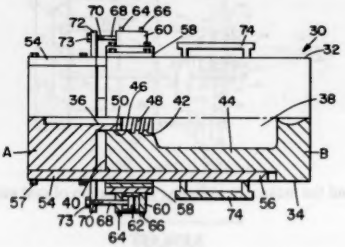
Filed July 16, 1973, Ser. No. 379,299

Int. Cl. B29d *23/03*

U.S. Cl. 425—326 B **1 Claim**

In a continuously operated blow molding machine utilizing a pair of molding units, each mold unit having two mold halves, said mold units being closed at a backward position and movable to a forward position so as to orient a preformed tube in the forward position, the tube being blown into a container, said mold unit opening and moving to the backward

position without any interference with the other mold unit. Each mold half consists of a neck forming and a body forming component slidably connected to each other by a sliding guide



means for forcing axially the tube inside of the mold cavity so as to relieve longitudinal orienting stresses and provide fully formed threads in the threaded neck portion of the container.

3,834,853

DEVICE FOR MAKING SHEETS

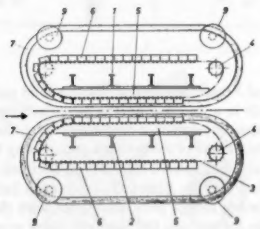
Jean Francois Bequet, Brussels; Paul Dubois, Braine-1 Alleud, and Roger Van Asbroeck, Neerijse, all of Belgium, assignors to Solvay & Cie, Brussels, Belgium

Filed Apr. 25, 1972, Ser. No. 247,271

Claims priority, application Belgium, May 10, 1971, 766911

Int. Cl. B28b *3/12*

U.S. Cl. 425—336 **11 Claims**



Device for continuous longitudinal corrugation of sheets of thermoplastic material including two sets of interdigitated endless bands which follow a rectilinear path in the zone where the sheets are cooled, the bands being guided at least over the portions thereof which contact the sheets by supports which act on that face of the band which is not in contact with the sheets.

3,834,854

METHOD AND APPARATUS FOR CHARGING A BURNER

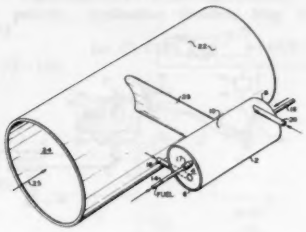
John W. Vanderveen, Bartlesville, Okla., assignor to Philips Petroleum Company, Bartlesville, Okla.

Filed Nov. 2, 1972, Ser. No. 303,204

Int. Cl. F23m *3/12*

U.S. Cl. 431—9 **12 Claims**

Apparatus and method for mixing fuel and combustion-supporting gas streams at an attitude for causing the mixture to rotate in a first direction and passing the rotating mixture into a burner at an attitude for causing the mixture to rotate in the



first direction within the burner for decreasing the pressure drop of the fluids passing into the burner.

3,834,855

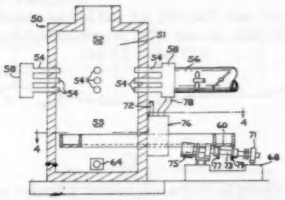
METHOD FOR DISPOSAL OF LIQUID WASTE

John D. Hummell, Brice, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 145,342, May 20, 1971, Pat. No. 3,748,081, which is a continuation-in-part of Ser. No. 19,833, March 16, 1970, abandoned. This application June 28, 1973, Ser. No. 374,710

Int. Cl. F23d *11/44*

U.S. Cl. 431—11 **17 Claims**



Disposal apparatus for burning liquid fuel waste comprises a vaporizing surface disposed below a combustion zone and adapted to receive the liquid fuel. The vaporizing surface can be a movable channel extending outside of the apparatus. In operation, the fuel is introduced into the apparatus in liquid form and then vaporized and burned.

3,834,856

PILOT RECLAMATION SYSTEM FOR GAS-FIRES FORCED DRAFT HEATER

Larry S. James, Wichita, Kans., assignor to The Coleman Company, Inc., Wichita, Kans.

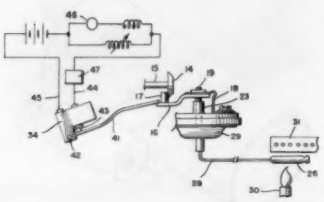
Filed Aug. 30, 1973, Ser. No. 393,123

Int. Cl. F23n *5/00*

U.S. Cl. 431—30 **9 Claims**

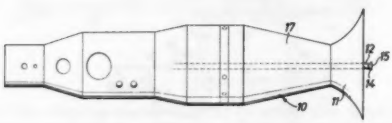
A pilot reclamation system energizes the combustion air blower of a heater before the pilot flame is completely extinguished from lack of oxygen so that the oxygen supply for the pilot flame is replenished. Sensing means for sensing the temperature of the pilot light is operatively connected to switch means for energizing the combustion air blower. The temperature sensing means includes plunger means which move the

switch means to close a circuit for the blower motor when the temperature of the pilot light falls below a predetermined level. When the oxygen supply to the pilot light is replenished



and the temperature of the pilot light rises above a predetermined level, the temperature sensing means allows the switch to move to the open position.

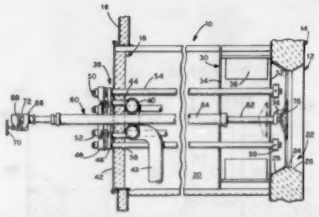
3,834,857
FLUID FUEL BURNERS
Maurice Hemingway, Mirfield, and Trevor Ward, Dewsbury, both of England, assignors to Hotwork Limited, Dewsbury, Yorkshire, England
Filed Dec. 14, 1972, Ser. No. 314,981
Claims priority, Great Britain, Dec. 15, 1971, 58276/71
Int. Cl. F23r *1/00*
U.S. Cl. 431—158 **5 Claims**



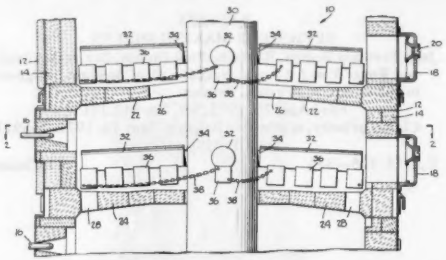
A burner casing defines a combustion chamber and a flared outlet nozzle. A compressed air tube extends through the combustion chamber and the outlet nozzle and terminates, at a point beyond the outlet nozzle, in a compressed air outlet orifice. An air spreader valve is mounted adjustably within the compressed air outlet orifice of the tube. Air fed to the combustion chamber to support combustion therein is fed preferably through an adjustable guide vane assembly. The hot gaseous products of combustion within the combustion chamber flow through the outlet nozzle with a spinning action and coact with an annular curtain of compressed air from the compressed air outlet orifice to emerge from the burner as a divergent stream.

3,834,858
FUEL BURNER
Brett C. Krippene; Merle M. Clark, both of Barberton, and Apostol Triffon, Stow, all of Ohio, assignors to The Babcock & Wilcox Company, New York, N.Y.
Filed Mar. 22, 1973, Ser. No. 343,984
Int. Cl. F23c *5/10*; **F23g** *9/00*
U.S. Cl. 431—279 **9 Claims**

An improved burner apparatus including a plurality of conduits discharging a gaseous fuel along an outwardly divergent path and the means for changing the location of said path.



3,834,859
RABBLING MEANS AND METHOD FOR A FURNACE HEARTH
Charles F. von Dreusche, Jr., Ramsey, N.J., assignor to Nichols Engineering & Research Corporation, Belle Mead, N.J.
Filed May 21, 1973, Ser. No. 362,335
Int. Cl. F27b *9/16, 1/02*
U.S. Cl. 432—18 **7 Claims**



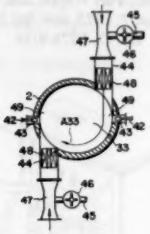
Method and Apparatus for distributing solid material over a furnace hearth in a multiple hearth furnace having a plurality of vertically spaced hearths, a rotatable center shaft extending up through the center of the furnace and passing through each hearth, a plurality of spaced rabble arms secured to the center shaft extending radially outwardly over each hearth, a chain disposed between rabble arms associated with the uppermost of the hearths for moving the material being processed when the center shaft is rotated, alternate hearths having drop holes disposed towards the center shaft and the other hearths having drop holes disposed towards the outer periphery thereof so that when the center shaft is rotated the material being processed is moved across the hearth to its drop hole and drops down to the next lower hearth.

3,834,860
APPARATUS FOR HEATING AND CALCINING OF POWDER AND/OR PULVERIZED MATERIALS
Yoshiharu Fukuda, and Yoshihiko Ueda, both of Tokyo, Japan, assignors to Onoda Cement Co. Ltd., Onoda-shi, Yamaguchi-ken, Japan
Filed Sept. 20, 1972, Ser. No. 290,766
Claims priority, application Japan, Mar. 8, 1972, 47-23798
Int. Cl. F27b *15/00*
U.S. Cl. 432—58 **8 Claims**

An apparatus for preheating or calcining of powder and/or pulverized materials in which a cylindrical combusion furnace comprises a precombustion chamber and a main combustion chamber. Air inlet pipes are connected tangentially

to said respective chambers in order that the air for use in combusting blown in said chambers from said air inlet pipes does a circling movement of the air stream.

The precombustion chamber is provided with a fuel spraying burner, and material feeding devices are set in combustion air inlet pipes which lead to said main



combustion chamber in order to separate powder and/or pulverized materials from the fuel gas in said combustion chamber by means of the centrifugal power and, further, to heat and calcine said material directly by a high temperatured combustion gas so as to obtain a calcining efficiency without incurring a damage to the wall of said furnace by heat.

3,834,861

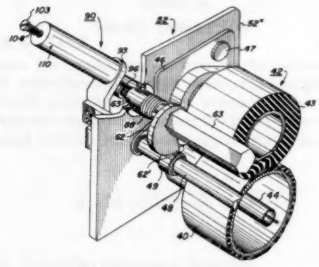
PRESSURE HEATED FUSER ASSEMBLY

Alan F. McCarroll, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Mar. 21, 1973, Ser. No. 343,610

Int. Cl. G03g *5/00*

U.S. Cl. 432—60 **1 Claim**



An electrostatographic type reproduction machine having a fuser for fixing developed images on the copy material, the fuser having cooperating heated and pressure rollers. The pressure roller is supported for movement away from the other roller to permit the rollers to be separated and the fuser unloaded. For this purpose, the pressure roller is carried in a pivotable frame driveable by cams into physical contact with the heated roller. A spring type return driver which is loaded on movement of the pressure roller into contact with the heated roller, serves when unlatched, to rapidly drive the fuser rollers apart. To reduce noise and shock on the fuser and related parts occasioned by release of the latch and unwinding of the spring drive, an adjustable pneumatic dampener is provide to retard separating movement of the fuser rollers.

3,834,862

APPARATUS FOR PRODUCING PELLETS OF EXPANDED CLAY

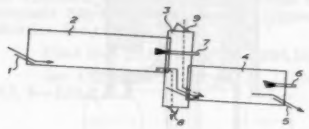
Karl Rudolf Eliasson, Roskildevagen 17 A, S-217 46 Malmo, Sweden

Filed May 14, 1973, Ser. No. 359,830

Claims priority, application Sweden, May 15, 1972, 006318/72

Int. Cl. F27b *7/02*

U.S. Cl. 432—106 **2 Claims**



An apparatus for producing pellets of expanded burnt clay comprises two rotary kilns, a drying kiln and a burning kiln which are arranged in such a way that they do not merge into each other centrally; the longitudinal axes thereof are offset vertically in an intermediate transition housing. The transition housing is provided with means for discharging material therefrom and supplying material thereto.

3,834,863

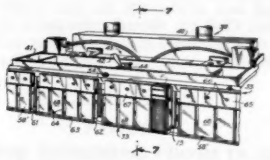
BRUSH FABRICATING APPARATUS

Gerhart Weiss, Flushing, N.Y., assignor to Baker Brush Co., Inc., New York, N.Y.

Continuation-in-part of Ser. No. 309,347, Nov. 24, 1972. This application Jan. 4, 1974, Ser. No. 430,788

Int. Cl. A46d *3/08*

U.S. Cl. 432—121 **4 Claims**



The present invention is directed to an apparatus for making brushes of the type in which a metallic ferrule, previously filled with bristles formed of thermoplastic material, is subjected to a heating step which fuses the exposed ends of the bristles internally of the ferrule into an integrated mass, the heating step at the same time preferably resulting in the formation of a connection between the molten material and the ferrule.

The apparatus includes a conveyor progressively moving from a loading zone to a heating zone and is characterized by the provision of magnetic means for supporting the ferrules, and cam means interposed between the loading and heating zones which engage the supported ferrules and accurately position the same a predetermined selected distance from the heating units, thus automatically to assure that the bristles are exposed to a precisely measured quantity of heat.

3,834,864

REGENERATOR CONSTRUCTION

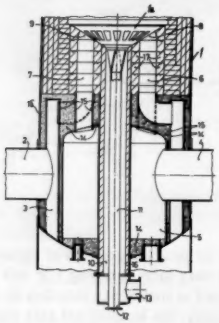
Wilhelm Jakobi, and Bernd Voges, both of Essen, Germany, assignors to Heinrich Koppers GmbH, Essen, Germany

Filed Mar. 19, 1973, Ser. No. 342,808

Claims priority, application Germany, Mar. 29, 1972, 2215347

Int. Cl. F23b 5/00

U.S. Cl. 432—222 9 Claims



An upright regenerator column has in its lower end portion a burner unit comprising an outlet unit formed with an annular series of apertures which communicate with the regions in the interior of the column above and below the unit and a distributor unit located at the lower end portion spaced from the outlet unit and having at least one distributor chamber each for a fuel-fluid and a combustion-supporting fluid, as well as conduits which communicate these chambers with respective ones of the apertures. The walls of the distributor unit are wholly or in part of a metallic jacket provided with a lining of tamped refractory material.

3,834,865

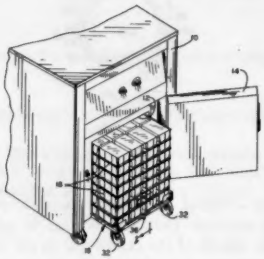
DOLLY STRUCTURE

Robert E. Lee, Huntington, Ind., assignor to Lincoln Manufacturing Company, Inc., Fort Wayne, Ind.

Filed Mar. 7, 1973, Ser. No. 338,885

Int. Cl. F27b 9/26

U.S. Cl. 432—241 6 Claims



A dolly structure, especially a portable dolly structure adapted to be rolled into and out of an oven enclosure to form the bottom thereof and adapted to support trays which carry sealed food packets which are heated in the oven enclosure and which are thereafter moved to a serving location while still carried on the dolly structure.

CHEMICAL

3,834,866

OXIDATION DYE COMPOSITIONS CONTAINING 5-AMINOGUAIACOLS AS COUPLERS

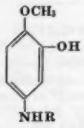
Franz Pum, Glen Ellyn, Ill., assignor to Alberto-Culver Company, Melrose Park, Ill.

No Drawing. Filed Apr. 4, 1972, Ser. No. 241,086

Int. Cl. D06p *1/32, 3/08*

U.S. Cl. 8—11 **12 Claims**

The synthesis of 5-aminoguaiacol derivatives of the formula



wherein R is alkyl, acetyl, carbamylmethyl or β-hydroxyethyl, wherein the alkyl radical contains 1 to 4 carbon atoms, is described, as well as aqueous dye solutions for human hair containing said 5-aminoguaiacol derivatives and dye bases derived from o- and p-phenylenediamines and from o- and p-aminophenols.

3,834,867

PROCESS FOR INCREASING THE AFFINITY FOR ANIONIC DYES OF HIGH MOLECULAR WEIGHT ORGANIC COMPOUNDS CONTAINING ALKYLATABLE GROUPS

Max Matter, Basel, Giuseppe Raspanti, Neu-Allschwil, Basel-Land, and Hermann Ulshoefer, Therwil, Basel-Land, Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

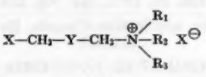
No Drawing. Filed Mar. 10, 1972, Ser. No. 233,708

Claims priority, application Switzerland, Mar. 15, 1971, 3,752/71

Int. Cl. D06m *13/46*

U.S. Cl. 8—115.5 **16 Claims**

Process for increasing the affinity for anionic dyes of undyed water-insoluble high molecular weight organic compounds containing groups which can be alkylated, which process comprises reacting the high molecular weight compound with an ammonium salt of the formula:



I

in which X signifies chlorine or bromine,

Y signifies a radical of formula —CH=CH— or a phenylene radical which is unsubstituted or substituted by up to a total of 2 alkyl groups which may be methyl or ethyl,

R_1, R_2 and R_3, independently signify hydrocarbon radicals consisting of aromatic and/or saturated aliphatic units, or

two of R_1, R_2 and R_3 jointly with the N atom form a heterocyclic ring, which is selected from heterocyclic rings containing one nitrogen atom, two nitrogen atoms and one nitrogen atom and one oxygen atom, and the other signifies a hydrocarbon radical as defined above or a further bond when the ring is unsaturated,

the total number of carbon atoms in R_1, R_2 and R_3 not being greater than 20, and the N atom not being bound directly to more than one aromatic radical.

3,834,868

PROCESS OF MANUFACTURING POLYESTER FIBER ARTICLE HAVING HIGH PILLING RESISTANCE

Yoshio Tatsuoka, Tsutomu Igarashi, Osamu Yoshida, and Takayoshi Miyachi, Otsu, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Dec. 2, 1971, Ser. No. 204,163

Int. Cl. D06m *11/02, 11/04, 13/30*

U.S. Cl. 8—130.1 **14 Claims**

A polyester fiber article having a high pilling resistance is prepared by applying a treating agent containing a substance corrosive to the polyester fiber such as zinc chloride or zinc bromide or zinc nitrate, or sulfuric acid, perchloric acid or benzene sulfonic acid in a fine particle size not exceeding 110μ onto the surface of the polyester fiber article so as to selectively deposit the particles on fluffs and outside fibers only of the article, and heating the article so as to selectively corrode the fluffs and the outside fibers. The resulting article contains fluffs having a pointed end and a periphery on which a plurality of recesses are formed.

3,834,869

SYSTEM FOR DISPERSING FIBERS IN SUSPENSION INCLUDING AIR LAYING WEB, CONDITIONING FIBERS IN WEB, DISPERSING WEB IN LIQUID

Bernard Ancelle, Lyon, and Pierre Lejuene, Grenoble, France, assignors to Creusot-Loire, Paris, France

Filed July 20, 1972, Ser. No. 273,628

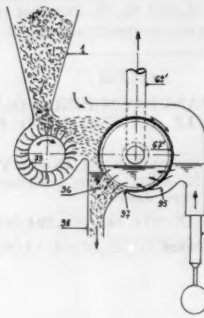
Claims priority, application France, Aug. 4, 1971, 7129475

Int. Cl. D06c *1/00;* **D21c** *9/06*

U.S. Cl. 8—151 **19 Claims**

A method and apparatus for improved dispersion of fibres or particles into a liquid suspension comprises the steps of first finely dispersing the fibres or particles in a gas or vapour current depositing the dispersed fibres or particles on a moving foraminous support and submerging the support with deposited fibers or particles in a liquid bath. The dispersing step may include mechanical

dispersion followed by entrainment of the dispersed fibres or particles in the gaseous stream. The moving support



may be a single foraminous screen, double foraminous screens, or a perforated cylinder.

3,834,870

TEXTILE FINISHING PROCESS

Charles R. Tucker, Raleigh, N.C., assignor to Hercules Incorporated, Wilmington, Del.

No Drawing. Continuation-in-part of abandoned application Ser. No. 108,969, Jan. 22, 1971. This application Oct. 31, 1972, Ser. No. 302,443

Int. Cl. D06p *5/00*

U.S. Cl. 8—168 **6 Claims**

Fastness properties of acid-dyed polypropylene yarns are improved by applying to the surface of the yarn, following completion of dyeing, a water-insoluble fatty acid ester.

3,834,871

DURABLE PRESS TEXTILE MATERIALS BY ANHYDROUS SOLVENT FINISHING PROCESS

Jimmy M. Thompson, Salisbury, N.C., assignor to Proctor Chemical Company, Inc., Salisbury, N.C.

No Drawing. Filed Jan. 5, 1972, Ser. No. 215,626

Int. Cl. D06m *13/12, 13/34*

U.S. Cl. 8—187 **11 Claims**

Anhydrous solvent finishing processes to impart durable press properties to cellulosic textile materials, e.g., flat goods or finished garments made of 100% cotton fiber or cotton/synthetic fiber blends, involve impregnating textile material with an anhydrous mixture of methylolated carbamate, organic solvent and organic aminoplast cross-linking catalyst, removing solvent, exposing the solvent-depleted textile material to water vapor to give a moisture regain of 8 to 15% and then heat curing at about 120° to 200° C. The anhydrous organic solvent mixture may include a soluble fire-retardant so that the resulting fabric acquires both durable press and fire retardancy properties.

3,834,872

TABLETOP STEAM STERILIZER

Larry James Joslyn, Walworth, N.Y., assignor to Sybron Corporation, Rochester, N.Y.

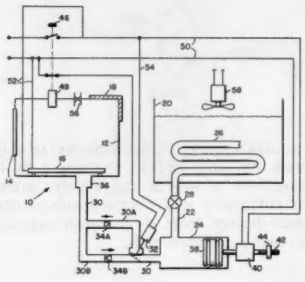
Filed July 3, 1972, Ser. No. 268,747

Int. Cl. A61l *3/00, 3/02*

U.S. Cl. 21—94 **3 Claims**

A tabletop steam sterilizer having an automatic refill means for introducing a measured amount of water into the sterilizer at the start of each sterilizing cycle. The refill means include a water container having a known volume, and the container is completely emptied into the sterilizer at the start of each cycle and refilled at the end of the cycle partly with condensed steam and partly with water from a separate reservoir.

In one embodiment, the container is a plunger chamber wherein a solenoid operated plunger is used to inject water into the sterilizing chamber. At the end of the sterilizing cycle, steam exhausts through the plunger chamber into a water reservoir. The pressure of steam in the plunger chamber forces the plunger back in a return stroke and heats the chamber. Subsequent cooling of the plunger chamber creates a partial vacuum which draws water back



into the plunger chamber from the reservoir to fill the chamber for the next cycle of operation.

In another embodiment, the container gravity feeds into the sterilizing chamber. At the end of the sterilizing cycle, steam is exhausted through an ejector having its outlet in the container and its suction leg in a water reservoir, so that water is pulled from the reservoir to condense the steam. This fills the container to overflowing so that the container is filled for the next cycle, the overflow being directed to the reservoir.

3,834,873

DIFFERENTIAL THERMAL DETECTION AND DIFFERENTIAL FLOW MICROCALORIMETRY

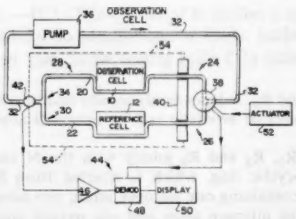
Patrick Picker, Sherbrooke, Quebec, Canada, assignor to Universite de Sherbrooke, Sherbrooke, Quebec, Canada

Filed Jan. 10, 1972, Ser. No. 216,543

Claims priority, application Canada, Dec. 29, 1971, 131,357

Int. Cl. G01k *17/02, 17/04;* **G01n** *33/00*

U.S. Cl. 23—230 R **16 Claims**



Differential detection in which a reference cell is used for comparison purposes with an observation cell in which

a phenomenon takes place. Detection is obtained by means of a single thermo-electric sensor. The sensor is mounted to a common conduit of heat exchange liquid flow circuit which uses two branch circuits, one associated with each cell. A flow chopping element at the inlet ends of the branch circuits provides complementary periodic flow heat exchange liquid segments in the branch circuits. These segments are then fed into a common return circuit where the sensor is installed.

A differential flow microcalorimeter using counter flow heat exchangers through which a liquid is circulated in complementary periodic flow segments. The segments are combined in a common return tube where instantaneous temperature variations are detected and then analysed.

3,834,874

DETECTION OF MALARIAL PARASITES IN BLOOD

Stanley Gottlieb, Philadelphia, and John A. Geating, Abington, Pa., assignors to General Electric Company

No Drawing. Filed Oct. 18, 1972, Ser. No. 298,549
Int. Cl. C03c *17/00*; G01n *1/30, 33/16*
U.S. Cl. 23—230 B **2 Claims**

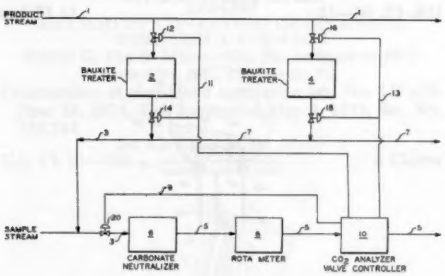
Pre-stained microscope slides having a surface covered with a dried mixture of Methylene Blue NN (also known as New Methylene Blue N) and Cresyl Violet Acetate, disclosed in a copending application as useful for observing normal blood constituents, are employed to observe samples of blood from patients suffering from Falciparum Malaria. Trophozoites and gametocytes are rendered readily observable and identifiable; personnel experienced in malarial-oriented hematology found the parasites in such preparations at least as readily observable as in the conventional Wright-stained preparation.

3,834,875

HYDROGEN FLUORIDE VAPOR DETECTING SYSTEM

Otis E. Ririe, Jr., Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Jan. 2, 1973, Ser. No. 320,502
Int. Cl. G01n *31/08*
U.S. Cl. 23—232 C **7 Claims**



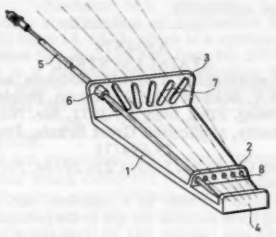
A process for the detection of hydrogen fluoride which comprises the steps of neutralizing the hydrogen fluoride content of a hydrogen fluoride-containing stream in an inorganic carbonate whereby carbon dioxide is released in proportions related to the hydrogen fluoride content of the stream, passing a resulting carbon dioxide enriched stream essentially free of hydrogen fluoride into a chromatographic gas analysis apparatus, and detecting the presence of the carbon dioxide enrichment resulting from the HF neutralization.

3,834,876

DEVICE FOR USE WITH A LIQUID TRANSFER APPLIANCE IN CHEMICAL ANALYSIS

Ferenc Körmendy, Ferenc Németh, István Murányi, and Gizella Balás, Budapest, Hungary, assignors to Labor Muszeripari Muvek, Esztergom, Hungary

Filed Oct. 11, 1973, Ser. No. 405,599
Claims priority, application Great Britain, Sept. 14, 1973, 43,202/73
Int. Cl. G01n *1/12*
U.S. Cl. 23—259 **5 Claims**



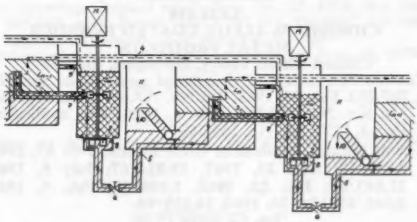
A device for facilitating the titration of liquids with the aid of capillary cage-type liquid transfer appliances, comprises a base plate with three unequally spaced upstanding flanges. The middle flange has bores for the capillary cage stems. The flange nearer the middle flange is an abutment for the stem ends. The third flange has slots diverging from the base plate. Thus the middle flange serves as a pivot for the stems, and the slots guide the pivoting of the stems so that the transverse stem spacing may be increased for charging the cages with liquid and decreased when the cages are rotated for mixing.

3,834,877

METHOD FOR STARTING AND STOPPING A MULTISTAGE LIQUID-LIQUID EXTRACTION SYSTEM

Heikki Ahonen, Oulu, Finland, assignor to Kemiro Oy, Helsinki, Finland

Filed Dec. 8, 1972, Ser. No. 313,244
Claims priority, application Finland, Dec. 10, 1971, 3,526/71
Int. Cl. B01d *11/04*
U.S. Cl. 23—293 R **2 Claims**



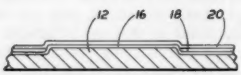
An extraction apparatus of the type described in our U.S. patent application Ser. No. 178,729 is stopped by closing the connection between the mixing space and its auxiliary space and mixing is discontinued, so that the dispersion cannot flow back into the auxiliary space; after the heavy and the lightweight phases have separated from each other in the mixing zone, the heavy phase in the

lower part of the mixing zone is allowed to flow by its own weight into the auxiliary space by opening the connection between the mixing space and its auxiliary space, the level in which is kept considerably lower than the liquid level in the mixing zone during the operation, then the connection between the auxiliary space and the mixing zone is reclosed; and the extraction is started by first starting the mixing in the mixing zone while the connection between the mixing zone and the auxiliary space is carefully opened, and finally the feeding of heavy phase from the settling zone into the auxiliary space is started after the surface level of the heavy phase in the auxiliary space has lowered sufficiently.

3,834,878
STAINLESS STEEL
Philip Vansteenkiste, Lodewijk, Belgium, assignor to N.V. Bekaert S.A., Zwevegem, Belgium
No Drawing. Filed June 26, 1972, Ser. No. 266,048
Claims priority, application Great Britain, June 24, 1971, 29,694/71
Int. Cl. B32b *15/18;* **C22c** *39/14, 39/20*
U.S. Cl. 29—180 S **6 Claims**

This invention relates to a stainless steel material in wire-shaped form suitable for use in the production of steel wool by shaving, which has an elongated grain in the longitudinal direction.

3,834,879
PLATED COINS
Jimmy K. Chin, 931 Race St., Philadelphia, Pa. 19107
Filed May 11, 1973, Ser. No. 358,621
Int. Cl. A44c *21/00;* **B32b** *15/00*
U.S. Cl. 29—191 **6 Claims**

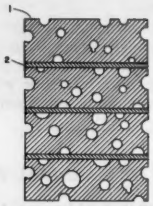


A method of plating coins to give them a decorative finish. The coins are formed from metal and have pictorial material on at least one face thereof. The method comprises applying a first decorative metal coating to the entire coin, masking the pictorial material and applying a second decorative metal coating over the coin. The mask is then removed, and the coin is left with a first decorative metal on the pictorial portion and a second decorative metal on the remainder of the coin. The invention also encompasses the coins produced by the method.

3,834,880
CHROMIUM ALLOY COATED FERROUS METAL PRODUCTS
Clifford Alfred Vessey, Harrogate, England
Continuation-in-part of abandoned applications Ser. No. 707,292, Feb. 21, 1968, Ser. No. 788,039, Dec. 30, 1968, and Ser. No. 797,269, Feb. 6, 1969. This application Dec. 1, 1971, Ser. No. 203,566
Claims priority, application Great Britain, Feb. 27, 1967, 9,239/67; Apr. 25, 1967, 19,024/67; July 5, 1967, 31,043/67; Jan. 12, 1968, 1,938/68; Feb. 9, 1968, 6,646/68; May 20, 1968, 24,029/68
Int. Cl. B32b *15/00*
U.S. Cl. 29—191.2 **16 Claims**

A ferrous metal substrate having compacted on to the surface thereof particles of an iron-chromium alloy containing a total of from 2 to 20% by weight based on the total weight of the alloy of aluminum and/or silicon is particularly suitable for being subjected to a heat treatment to produce a chromised product. Chromised products obtained from the substrate according to the invention are suitable for reduction by cold rolling.

3,834,881
FOAMED METAL ARTICLE
Leonard M. Niebylski, Birmingham, Mich., assignor to Ethyl Corporation, Richmond, Va.
Filed Nov. 24, 1971, Ser. No. 201,909
Int. Cl. B32b *15/00*
U.S. Cl. 29—197.5 **8 Claims**

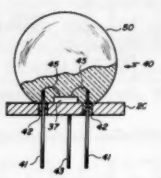


A laminated structure of foamed metal layers with a load distributing sheet material interposed between the foamed metal to prevent catastrophic shear.

3,834,882
ANTI-ICING GASOLINE COMPOSITION
Bruce Hollis Garth, Newark, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Filed Oct. 6, 1972, Ser. No. 295,657
Int. Cl. C10l *1/18*
U.S. Cl. 44—66 **9 Claims**

Gasoline composition having a major fraction of gasoline and, as an anti-icing agent, an effective amount of an additive comprising, by weight, about 0–30% rosin acid and about 70–100% of a mixture comprising 30–70% dimer acid and 30–70% trimer acid, for example, an additive consisting essentially of 12% of rosin acid and 88% of a mixture comprising 43% linoleic acid dimer acid and 57% linoleic acid trimer acid.

3,834,883
ENCAPSULATION FOR LIGHT-EMITTING DIODES
Richard M. Klein, Framingham, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.
Filed Nov. 20, 1972, Ser. No. 308,228
Int. Cl. C03c *3/00, 27/00*
U.S. Cl. 65—32 **16 Claims**



An optical semiconductor device including an electroluminescent diode mounted on a support so that radiation from the diode is emitted away from the support. A glass dome is mounted on the support and covers the diode so as to be in intimate contact with the diode. The radiation emitted from the diode passes through the glass dome so as to improve the external emission efficiency of the device.

The optical semiconductor device is made by mounting the electroluminescent diode on a support and then forming a glass dome over the diode with the glass dome being in intimate contact with and fused to the diode, the glass dome being formed of a translucent partially devetrified

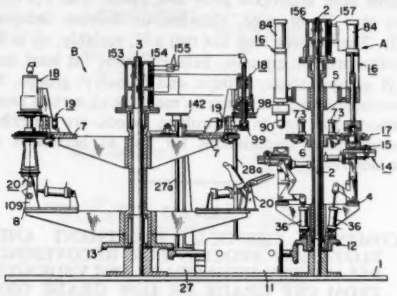
phase-separated chalcogenide glass from the As-Br-S system. The translucent chalcogenide glass is prepared in evacuated sealed ampoules and after being applied to the diode the glass is heat treated to enhance the phase-separation process.

3,834,884

APPARATUS FOR BLOW-MOLDING HOLLOW GLASSWARE IN GLASS RETAINING UNIT

Takaaki Kurokawa, Chigasaki, Junji Yamada, Yokohama, Susumu Hoshika, Tokyo-to, and Yukio Jujo, Sagamihara, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki-shi, Japan

Filed Aug. 28, 1972, Ser. No. 284,073
Claims priority, application Japan, Sept. 6, 1971, 46/68,115
Int. Cl. C03b *9/00*
U.S. Cl. 65—229 **15 Claims**



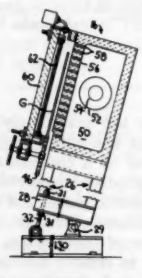
In a process and apparatus for blow-molding a hollow glassware, a glass gob received in a gob tray is preliminarily formed into a concaved flat gob with the periphery thereof retained by a glass-retaining unit, which unit, as it supports the gob, is then conveyed to a secondary forming section of the apparatus wherein the flat gob supported from the glass-retaining unit is subjected to a blow-molding operation in the course of travel through the secondary forming section of the apparatus.

3,834,885

METHOD OF CONVEYING GLASS SHEETS THROUGH A FURNACE

Robert G. Frank, Murrysville, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of abandoned application Ser. No. 157,475, June 28, 1971. This application May 9, 1973, Ser. No. 358,782
Int. Cl. C03b *25/04, 27/00*
U.S. Cl. 65—106 **8 Claims**



This invention relates to treating glass sheets, and particularly relates to press bending glass sheets by a movable press bending apparatus that engages a glass sheet heated to its deformation temperature and moves with the glass sheet to transfer the sheet while it is being shaped by pressure engagement from a first conveyor to a second conveyor. Means is provided to tilt the conveyors to provide gaseous support in an oblique plane for different thicknesses of glass sheets processed.

3,834,886

POTASSIUM PHOSPHATE FERTILIZER PROCESS

Robert L. Somerville, Rte. 1, Box 256, Old Amwell Road, Neshanic, N.J. 08853

No Drawing. Continuation of application Ser. No. 340,683, Mar. 13, 1973, which is a continuation of application Ser. No. 263,449, June 16, 1972, which in turn is a continuation of application Ser. No. 34,607, May 4, 1970, all now abandoned. This application Nov. 14, 1973, Ser. No. 415,493
Int. Cl. C05b *7/00*
U.S. Cl. 71—34 **2 Claims**

A process for preparing high analysis potassium phosphate fertilizer which comprises mixing a heated solution or slurry of mono- and diammonium phosphate with a heated slurry of potassium chloride in phosphoric acid, controlling the pH level of the mixture and then cooling to precipitate a complex material consisting primarily of monopotassium phosphate precipitates.

3,834,887

STUNTING PLANTS EMPLOYING 4-OXO-α-PHENYL-2,5 - CYCLOHEXADIENE-$\Delta^{1,5}$-ACETONITRILE, O-(ALKYLCARBAMYL)OXIMES

William D. Dixon, Kirkwood, Mo., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Original application Nov. 24, 1971, Ser. No. 201,958, now abandoned. Divided and this application Sept. 24, 1973, Ser. No. 400,110
Int. Cl. A01n *9/20*
U.S. Cl. 71—76 **5 Claims**

Certain 4 - oxo - α-phenyl-2,5-cyclohexadiene-$\Delta^{1,5}$-acetonitrile, O-(alkylcarbamoyl)oximes are preperad by reacting a phenylcyanomethylene quinone oxime with either an alkyl isocyanate or a dialkyl carbamoyl chloride.

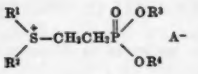
3,834,888

PLANT GROWTH REGULATING COMPOSITIONS COMPRISING 2 - (S,S-DIHYDROCARBYL) SULPHONIUM ETHANE PHOSPHONIC ACID COMPOUNDS AS ACTIVE COMPONENT

Edwin Francis George, Basingstoke, and Alan John Davidson, Wokingham, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Original application Jan. 25, 1971, Ser. No. 109,569, now Patent No. 3,711,493. Divided and this application July 20, 1972, Ser. No. 273,426
Claims priority, application Great Britain, June 10, 1970, 29,123/70
Int. Cl. A01n *9/36*
U.S. Cl. 71—87 **4 Claims**

Process and compositions for regulating plant growth using, as the active agent, a compound of the formula



wherein R^1 and R^2 are selected from the group consisting of lower alkyl radicals, benzyl radicals and the tetramethylene radical, R^3 and R^4 are selected from hydrogen atoms, lower alkyl radicals, chloroethyl radicals, phenyl radicals and o-hydroxyphenyl radicals, and A^- represents a non-phytotoxic anion. The compound can be used, for

example, to promote the ripening of tomatoes or the loosening of fruit.

3,834,889

HERBICIDAL COMPOSITION AND METHOD EMPLOYING PYRIDAZONE DERIVATIVES

Cuno Ebner, Reinach, and Max Schuler, Arlesheim, Basel-Land, Switzerland, assignors to Fidelity Union Trust Company, executive trustee under Sandoz Trust of May 4, 1955

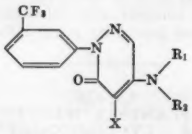
No Drawing. Application Dec. 4, 1969, Ser. No. 882,294, now Patent No. 3,644,355, which is a continuation-in-part of abandoned application Ser. No. 691,249, Dec. 18, 1967. Divided and this application Sept. 13, 1971, Ser. No. 180,178

Claims priority, application Switzerland, Jan. 2, 1967, 52/67

Int. Cl. A01n *9/22*

U.S. Cl. 71—92 **7 Claims**

Compounds of formula:



in which X signifies chlorine or bromine, R_1 signifies hydrogen or methyl and R_2 signifies methyl or, when R_1 signifies hydrogen, R_2 may also signify ethyl, are disclosed as possessing selective herbicidal activity in cotton and carrots.

3,834,890

HERBICIDAL COMPOSITIONS AND METHODS EMPLOYING MONO, DI AND TRIPYRIDINE COMPLEXES OF ORGANO TIN COMPOUNDS

Holger Meyer, Bromma, Sweden, assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Original application Nov. 21, 1966, Ser. No. 595,599, now Patent No. 3,661,911. Divided and this application Dec. 1, 1971, Ser. No. 203,864

Int. Cl. A01n *9/22*

U.S. Cl. 71—94 **2 Claims**

Herbicidal compositions containing as the active ingredient the mono, di and tripyridine complexes of organo tin compounds are disclosed, as well as a method for their use. Exemplifying this class are compositions containing dibromopropyltriphenyltin dipyridine complex.

3,834,891

HERBICIDAL COMPOSITIONS

Robert F. Husted, Florissant, and Rodney O. Radke, St. Charles, Mo., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Dec. 20, 1971, Ser. No. 210,110

Int. Cl. A01n *9/24*

U.S. Cl. 71—109 **9 Claims**

Herbicidal compositions comprising 3'-(N-orthochlorobenzyl-N-methylcarbamoyloxy) propionanilide with a substituted phenoxyacetic acid selected from the group consisting of 2,4-dichlorophenoxyacetic acid and 2-chloro-4-methylphenoxyacetic acid or their esters.

3,834,892

HERBICIDAL METHODS AND COMPOSITIONS USING 1' - VARIABLE - 1',1' - DIHALO-HALOBENZENEAZOMETHANES

Malcolm W. Moon and Victor L. Rizzo, Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Filed Apr. 28, 1971, Ser. No. 138,269

Int. Cl. A01n *9/24*

U.S. Cl. 71—121 **23 Claims**

Some new 1'-variable - 1',1' - dihalo-halobenzeneazomethanes have been synthesized and found to be active against both arthropod pests and weeds. The 1',1'-halogens may be bromine, chlorine, or fluorine, independently. The benzene ring has two and, variably, up to five substituents; for example, halogen atoms (at least one), alkyl groups, alkoxy groups, and haloalkyl groups. The 1'-variable group may have as many as 12 carbon atoms. Methods for use in controlling weeds are described. Representative formulations for use as herbicides are also described.

3,834,893

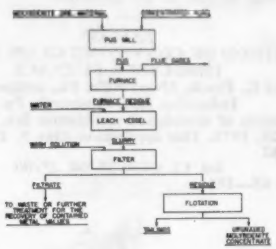
COMBINED CHEMICAL TREATMENT AND FLOTATION PROCESS FOR RECOVERING RELATIVELY HIGH GRADE MOLYBDENITE FROM OFF GRADE OR LOW GRADE ORE MATERIALS

Paul B. Queneau and John D. Prater, Salt Lake City, Utah, assignors to Kennecott Copper Corporation, New York, N.Y.

Filed Mar. 26, 1969, Ser. No. 810,449

Int. Cl. C22b *1/06, 1/08, 3/00*

U.S. Cl. 75—2 **9 Claims**



An off grade or low grade molybdenite ore material containing insoluble non-sulfide gangue as well as other impurities is treated by a combination of chemical and flotation steps to produce a molybdenite concentrate of commercially acceptable grade. The ore material, usually a molybdenite flotation concentrate, is subjected to roasting in the presence of concentrated sulfuric acid and is thereafter leached to remove soluble impurities, such as copper, iron, lead, and phosphorous. This treatment deactivates the insoluble non-sulfide mineral gangue, and makes it possible to selectively recover, by a subsequent

flotation step, a molybdenite froth concentrate of commercially acceptable grade. Chlorine gas may be substituted for sulfuric acid during the roasting procedure, but with less satisfactory results.

3,834,894

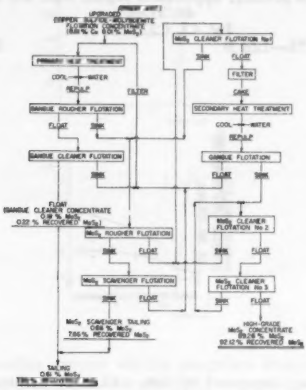
PROCESS FOR RECOVERING MOLYBDENUM VALUES FROM MOLYBDENITE ORE MATERIALS

Henry Rush Spedden and Arthur W. Last, Salt Lake City, Utah, assignors to Kennecott Copper Corporation, New York, N.Y.

Filed Apr. 10, 1969, Ser. No. 814,918

Int. Cl. B03d *1/00*

U.S. Cl. 75—2 **5 Claims**



An improvement in the processing of molybdenite ore materials, usually molybdenite-bearing copper sulfide concentrates, for the recovery of the molybdenum values contained therein. Instead of the conventional flotation circuit, wherein middlings are recirculated and molybdenite values therein recovered in a relatively high grade molybdenite concentrate as a final product meeting established specifications as to MoS_2 content, and normally also as to chemical grade, at least a part of the middlings are drawn off as a relatively low grade molybdenite intermediate product and are treated separately for the recovery of the contained molybdenum values. Recovery of molybdenum values in terms of both high grade concentrate and the low grade intermediate product is significantly higher than is recovery of molybdenum values in terms of the conventional high grade concentrate based on the customary recirculation of middlings.

3,834,895

METHOD OF RECLAIMING IRON FROM FERROUS DUST

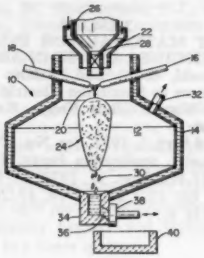
John F. Cachat, Cleveland, Ohio, assignor to Park-Ohio Industries, Inc., Cleveland, Ohio

Filed Apr. 11, 1973, Ser. No. 350,207

Int. Cl. C21c *5/52*

U.S. Cl. 75—11 **7 Claims**

Iron bearing particulate waste material is introduced into a plasma-arc furnace and heated in the furnace to separate the iron from the particulate material and to melt the iron. The molten iron is collected in a trough in the bottom of the plasma-arc furnace and is discharged



from the furnace directly into an ingot mold or steel making furnace.

3,834,896

RECOVERY OF GOLD

Judith A. Eisele, Verdi, and Harold J. Heinen, Reno, Nev., assignors to the United States of America as represented by the Secretary of the Interior

No Drawing. Filed June 21, 1972, Ser. No. 265,011

Int. Cl. B01j *1/22;* **C01g** *7/00;* **C22b** *11/00*

U.S. Cl. 75—112 **4 Claims**

Gold is recovered from its ores by treating the ores at elevated temperature with gaseous chlorine in the presence of (1) a promoter comprising a compound of iron, aluminum or gallium and (2) activated carbon, whereby the complex $AuMeCl_6$, where Me is iron, aluminum or gallium, is formed and is adsorbed on the activated carbon. The gold-laden activated carbon is then separated from the gangue by froth flotation and the gold recovered from the carbon by conventional means.

3,834,897

LOW-CARBON, HIGH-STRENGTH STRUCTURAL STEEL WITH GOOD WELDABILITY

Harri P. Nevalainen, Imatra, Finland, assignor to Ovako Oy, Helsinki, Finland

Continuation-in-part of application Ser. No. 129,572, Mar. 30, 1971. This application Feb. 13, 1973, Ser. No. 331,743

Int. Cl. C22c *37/10, 39/14*

U.S. Cl. 75—124 **5 Claims**

High strength structural steels having good weldability contain 0.04% to 0.08% carbon, from 0.6% to 2.0% manganese, from 0.1% to 0.5% silicon, from 2% to 5%

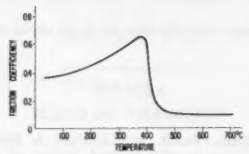
chromium, from 0.01% to 0.05% metallic aluminum, from 0.03% to 0.1% niobium, the balance, apart from incidental impurities, being iron.

3,834,898

VALVE SEAT MATERIAL FOR INTERNAL COMBUSTION ENGINES AND SIMILAR MATERIAL

Kenya Motoyoshi, Itami, and Makoto Osawa, Tokyo, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, and Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sept. 3, 1971, Ser. No. 177,719
Claims priority, application Japan, Sept. 3, 1970, 45/77,402; Nov. 11, 1970, 45/98,655
Int. Cl. C22c *37/14, 39/20*
U.S. Cl. 75—126 R **1 Claim**



A valve seat material for an internal combustion engine, which comprises an iron base alloy matrix having dispersed therein a member selected from the group consisting of Pb and a Pb compound and glass.

3,834,899

METHOD OF MANUFACTURING LOW-CARBON FERROCHROMIUM

Isao Tanabe, Tokyo, Japan, assignor to Japan Metals and Chemicals Co., Ltd., Tokyo, Japan

No Drawing. Continuation-in-part of abandoned application Ser. No. 98,888, Dec. 16, 1970. This application Apr. 6, 1972, Ser. No. 241,827
Claims priority, application Japan, Feb. 9, 1970, 45/11,360
Int. Cl. C22c *33/00*
U.S. Cl. 75—130.5 **2 Claims**

A method of manufacturing low-carbon ferrochromium is disclosed.

(a) A mixture of chrome ore and lime is heated to a temperature of about between 900–1250° C. until a burnt material having a CO_2-content of less than 0.1% by weight is obtained.

(b) 30–60 parts by weight of the burnt material of (a) are then subjected to smelting in an electric furnace to obtain a slag.

(c) The remaining 70–40 parts of the burnt material of (a) are then admixed with the theoretically calculated amount of silicochromium having a Si content of about between 38–54% by weight. At least 80% by weight of the silicochromium is admixed with the remaining 70–40 parts of the burnt material of (a) in molten state while the remainder of the silicochromium is admixed in unheated state.

(d) The mixture of (c) is then reacted with the smelted slag of (b).

3,834,900

STRIP CASTING ALUMINUM ALLOY

Albert Joseph Klein, Arlington Heights, Ill., assignor to American Can Company, Greenwich, Conn.

No Drawing. Filed Oct. 16, 1972, Ser. No. 297,828
Int. Cl. C22c *21/02*
U.S. Cl. 75—142 **6 Claims**

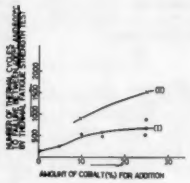
An aluminum alloy comprising, by weight, 2.4 to 3.2% magnesium, 0.6 to 0.8% iron, 0.2 to 0.3% silicon, 0.2 to 0.3% copper, 0.2 to 0.3% manganese, 0.005 to 0.025% titanium, and 0.005 to 0.025% boron, and less than 0.01% chromium, the balance being aluminum, is especially useful since it can be formed by strip casting. The alloy possesses a combination of strength and formability well suited for aluminum can ends and drawn and ironed can bodies.

3,834,901

ALLOY COMPOSED OF IRON, NICKEL, CHROMIUM AND COBALT

Masahiko Kamiya and Michiyoshi Naya, Yokohama, and Sadaoki Hisamatsu, Fujisawa, Japan, assignors to Isuzu Motors Limited, Tokyo, Japan

Continuation-in-part of abandoned application Ser. No. 28,731, Apr. 15, 1970. This application Nov. 6, 1972, Ser. No. 303,926
Claims priority, application Japan, Apr. 23, 1969, 44/31,649
Int. Cl. C22c *39/20*
U.S. Cl. 75—128 B **2 Claims**



An alloy composed of iron, nickel, chromium and cobalt, resistant to thermal fatigue, cracking and corrosion, comprising by weight percent

Carbon	0.05–1.0
Silicon	0.1–3.0
Manganese	0.1–3.0
Nickel	1.0–19
Chromium	26–35
Molybdenum	0.1–3.0
Tungsten	0.1–6.0
Niobium	0.1–0.45
Nitrogen	0.03–0.3
Cobalt	9–30
Boron	0.005–0.15

Balance of iron except for incidental impurities.

3,834,902

PHOTOGRAPHIC MATERIAL CONTAINING A MESYLATE COMPOUND AS HARDENER AND ANTIFOGGANT

Charles J. Wright, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Sept. 29, 1972, Ser. No. 293,696
Int. Cl. G03c *1/00, 1/30, 1/34, 1/40, 1/68;* **G03g** *5/00*
U.S. Cl. 96—1.8 **10 Claims**

Photographic elements are disclosed containing a hydrophilic colloid layer hardened with a compound having the structural formula:

$$CH_3SO_2OCH_2CH_2SO_2(ASO_2)_mCH_2CH_2OSO_2CH_3$$

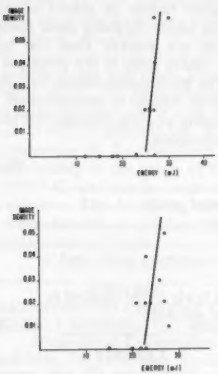
wherein A contains no more than nine atoms linking the sulfonyl groups and is an alkylene or oxaalkylene group having up to three oxygen atoms and m is 0 or 1. The hardener also serves as an antifoggant in photographic applications.

3,834,903

IMAGEWISE EXPOSING A METAL HALIDE LAYER WITH LASER TO FORM PERMANENT METAL IMAGE

Eiichi Inoue and Hiroshi Kokado, Tokyo, Isamu Shimzu, Yokohama, and Shuichi Ohtsuka, Tokyo, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed June 9, 1972, Ser. No. 261,466
Claims priority, application Japan, June 10, 1971, 46/41,186
Int. Cl. G03c 5/04
U.S. Cl. 96—27 E 6 Claims



A recording process whrich comprises imagewise exposing a crystal layer of metal halides to an energy having an intensity which satisfies the equation

$$D=KI^n$$

in which D is the optical density, K is a constant equal to 6×10^{-5}, I is the intensity of the exposing energy, and n is a number of 1 or greater is disclosed.

3,834,904

COPYING PROCESS UTILIZING A TRANSPARENT COMPOSITE FILTER WITH ELEMENTARY ZONES

Seiji Matsumoto and Satoru Honjo, Asaka, Japan, assignors to Fuji Shashin Film Kabushiki Kaisha, Minami-Ashigara-machi, Kanagawa, Japan

Continuation-in-part of abandoned application Ser. No. 691,825, Dec. 19, 1967. This application Dec. 4, 1972, Ser. No. 312,203
Int. Cl. G03c 5/04
U.S. Cl. 96—27 E 10 Claims

A method of copying which comprises optically combining an original to be copied with a transparent composite filter having therein two or more minute, elementary zones, each of which has substantially the same effective absorption factor defined in the specification in the sensitive region of a light sensitive copying material to be employed, differing in the spectral absorption characteristics in the same region, a pattern of one of said zones being not congruent with another pattern of said other zones, then subjecting to image exposure a light sensitive material having a sensitivity at least in a part of the visible region of the spectrum through the resulting combination, and thereby converting the difference of colors on said original into that of patterns on said filter to thus reproduce an image of the original.

3,834,905

METHOD OF MAKING ELLIPTICALLY OR RECTANGULARLY GRADED PHOTOPRINTING MASTERS

John Alton Dodd, Jr., Haddonfield, N.J., and Raymond Fujio Okamoto, Glenside, Pa., assignors to RCA Corporation

Filed May 23, 1973, Ser. No. 363,298
Int. Cl. G03c 5/09
U.S. Cl. 96—27 E 12 Claims

A method is provided for making a graded photoprinting master. The photoprinting master is photographically produced from a first master by contact printing the first master upon a photosensitive layer including varying the degree of exposure of the photosensitive layer by exposing the first master to light passing through means for varying exposure in a circular manner and through means for varying exposure in a linear manner.

3,834,906

LIGHT ACTIVATING IMAGING PROCESS

Alan R. Monahan, East Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

No Drawing. Continuation of abandoned application Ser. No. 816,104, Apr. 14, 1969. This application Apr. 18, 1972, Ser. No. 245,276
Int. Cl. G03c 5/00
U.S. Cl. 96—35.1 6 Claims

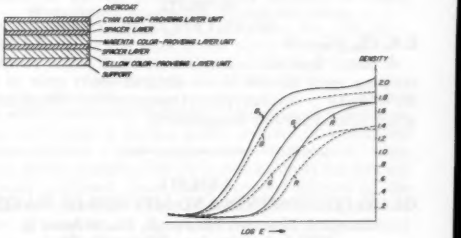
There is disclosed an imaging system whereby alkyl esters of polyvinylaryl sulfonic acids are selectively insolubilized upon exposure to actinic radiation.

3,834,907

PHOTOGRAPHIC ELEMENTS CONTAINING COLOR-PROVIDING LAYER UNITS FOR AMPLIFICATION PROCESSES

Vernon L. Bissonette, Brockport, N.Y. (% Eastman Kodak Company, Rochester, N.Y. 14650)

Continuation-in-part of applications Ser. No. 150,741, June 7, 1971, now abandoned, and Ser. No. 189,289, Oct. 14, 1971. This application May 23, 1972, Ser. No. 256,072
Int. Cl. G03c 1/30, 1/40
U.S. Cl. 96—74 50 Claims



Photographic elements are disclosed which comprise a support having thereon at least one dye image-providing layer unit which contains a light-sensitive silver salt and a stoichiometric excess of an image dye-providing color coupler. In one aspect, the photographic elements of this invention are multicolor photographic elements wherein at least two distinct colors are produced in two separate layer units of the element. In another aspect, multicolor photographic elements are disclosed which comprise at least two image dye-providing layer units containing a silver halide emulsion in a concentration of up to 30 mg./ft.^{2} of silver and an image dye-providing color coupler in at least a 40 percent stoichiometric excess based on silver.

3,834,908

COLOR SILVER HALIDE PHOTOGRAPHIC MATERIALS CONTAINING BIS-PYRAZOLONE COLOR COUPLERS

Hiroshi Hara, Yukio Yokota, Hiroyuki Amano, and Tokio Nishimura, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

No Drawing. Filed July 10, 1973, Ser. No. 377,991

Claims priority, application Japan, July 11, 1972, 47/69,409

Int. Cl. G03c *1/40*

U.S. Cl. 96—100 2 Claims

A silver halide color photographic material capable of providing stable magenta images containing a bis-3-ureido-5- pyrazolone prepared by the reaction of a 3-ureido-5-pyrazolone with a compound having an aldehyde group.

3,834,909

METHOD OF MANUFACTURING LITHOPRINTING PLATE

Noriyuki Usui, Tetsuo Tanaka, Fumiaki Arai, and Morikazu Shinozaki, Tokyo, Japan, assignors to Kabushiki Kaisha Ricoh, Tokyo, Japan

No Drawing. Filed Feb. 7, 1973, Ser. No. 330,286

Claims priority, application Japan, Feb. 8, 1972, 47/13,325

Int. Cl. G03g *9/04, 13/10, 13/22*

U.S. Cl. 96—1 LY 4 Claims

Process for producing a lithoprinting p'ate in which a latent electrostatic image is produced on a photoconductive plate on which the photoconductive surface layer has a contact angle with water of from 135° to 180° at 20° C. and 65% relative humidity, developing the image with a liquid developer, applying an electric charge and etching.

3,834,910

PENCIL LEAD

Atsuhiko Mukai and Yoshio Mori, Sagamihara, Japan, assignors to Teijin Limited, Osaka, Japan

No Drawing. Filed Nov. 6, 1972, Ser. No. 303,872

Claims priority, application Japan, Nov. 13, 1971, 46/90,772

Int. Cl. C09d *13/00*

U.S. Cl. 106—19 2 Claims

A pencil lead which consists essentially of a powdery coloring agent bonded by an uncured epoxy resin of the 2,2 - bis(4' - hydroxyphenyl)propane/epichlorohydrine which is solid at room temperature.

3,834,911

GLASS COMPOSITION AND METHOD OF MAKING

Joseph J. Hammel, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed May 31, 1972, Ser. No. 258,149

Int. Cl. C03c *3/22*

U.S. Cl. 106—39.7 5 Claims

Novel thermally crystallizable glass compositions which are relatively non-volatile and have good melting and forming characteristics containing: 64–74 percent SiO_2, 15–23 percent Al_2O_3, 3.3–4.8 percent Li_2O, 2.0–5.0 percent TiO_2, 0.6–1.6 percent ZrO_2, 1.0–2.1 percent BaO, 0.10–0.30 percent F^- and 0–0.5 percent MgO, and glass-ceramic articles made therefrom are disclosed. The glass-ceramics have coefficients of thermal expansion of below 2.0×10^{-7}/° C. over the temperature range of 0 to 300° C. and have well nucleated, smooth surfaces, making the glass-ceramics particularly useful as cooking surfaces for stove tops and the like.

3,834,912

LEAD BORATE CONTAINING PHOTOTROPIC GLASS

Georg Gliemeroth, Mainz-Mombach, Germany, assignor to Jenaer Glaswerke Schott & Gen.

Continuation-in-part of abandoned application Ser. No. 685,596, Nov. 24, 1967. This application Feb. 24, 1971, Ser. No. 118,513

Claims priority, application Germany, Dec. 24, 1966, J 32,618

Int. Cl. C03c *3/14, 3/26, 3/30*

U.S. Cl. 106—47 R 5 Claims

Phototropic glass compositions are disclosed, the phototropic properties of which are due to the presence in the composition of silver halide or mixed silver and silver halide crystals. The oxide forming glass composition has oxide bonds which are weaker than the bonding in a silicate base glass where SiO_2 is the principal glass forming component. The glass composition, i.e., the base glass into which the silver halide is incorporated, can consist entirely of boric oxide as glass former, but preferably has the following composition:

	Weight percent
Boric oxide	13.5–100
Alkaline earth metal oxide	0–40
Alkali metal oxide	0–21
Silica	0–10
Zirconium oxide, aluminum oxide and/or zinc oxide	0–25
Lead oxide (when boric oxide content is up to 48 weight percent)	29–73

3,834,913

ABNORMAL DISPERSION GLASS EXHIBITING THE ABNORMAL PARTIAL DISPERSION IN THE INFRARED REGION

Yoshiyuki Asahara, Kawasaki, and Tetsuro Izumitani, Tokyo, Japan, assignors to Hoya Glass Works, Ltd., Tokyo, Japan

Filed July 10, 1972, Ser. No. 270,403

Claims priority, application Japan, July 8, 1971, 46/50,505

Int. Cl. C03c *3/04, 3/10, 3/30*

U.S. Cl. 106—53 2 Claims

This invention provides an abnormal dispersion glass exhibiting the abnormal partial dispersion in the infrared region. This abnormal dispersion glass has a small Abbe number and favorable acid resistance, and is composed of B_2O_3 54 to 60 mol. percent, PbO 7 to 12 mol. percent, Al_2O_3 8 to 14 mol. percent, CaO 8 to 15 mol. percent, ZrO_2 0 to 1.5 mol. percent, TiO_2 1.5 to 4.0 mol. percent and SiO_2 4 to 11 mol. percent.

3,834,914

REFRACTORY RAMMING MIX

Joseph E. Neely, Los Gatos, and Nicholas Cassens, Jr., Pleasanton, Calif., assignors to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

No Drawing. Filed Mar. 7, 1973, Ser. No. 338,934

Int. Cl. C04b *35/04, 35/12*

U.S. Cl. 106—59 13 Claims

A sodium silicate bonded, MgO-containing, prepared refractory ramming mix is made from prereacted chrome-periclase or periclase-chrome grain, a soluble boron compound, a water retention agent, sodium silicate, and water. Chrome ore may be substituted for the prereacted grain, and the composition may contain up to 10% periclase grain. The boron compound and water retention agent are mixed dry with the refractory grain, and water sub-

sequently added. After the water is distributed throughout the boron compound and water retention agent coating the grain, sodium silicate is added. The particular method of mixing produces a product which can be stored for relatively long periods of time without setting.

3,834,915

FINE GRAIN TRANSLUCENT ALUMINA

Joseph J. Cleveland, Wysox, and Carl W. Fritsch, Jr., Dushore, Pa., assignors to GTE Sylvania Incorporated

No Drawing. Filed July 24, 1972, Ser. No. 274,240
Int. Cl. C04b *35/10*; H01j *61/30*
U.S. Cl. 106—73.4 3 Claims

A translucent alumina composition exhibiting color stability, a high degree of light transmission, thermal shock resistance and a relatively fine grain size is disclosed. The composition consists essentially of from about 99.8 to about 99.95% aluminum oxide, from about 0.025 to about 0.10% magnesium oxide and from about 0.025 to about 0.10% ytterbium oxide. An improvement to the process for making translucent alumina is also disclosed. By adding from about 0.025 to about 0.1% of ytterbium oxide, the firing temperature of the composite in hydrogen can be lowered appreciably to the range of from about 1620° C. to about 1680° C. and results in an average grain size of about 10 microns. The foregoing translucent alumina composition when formed in tubular shapes is particularly suited for arc discharge lamps.

3,834,916

FIBER-REINFORCED CEMENT COMPOSITE

Clyde E. Kesler, Champaign, Ill., assignor to United States Steel Corporation

Filed Mar. 23, 1972, Ser. No. 237,300
Int. Cl. C04b *7/12*
U.S. Cl. 106—99 1 Claim

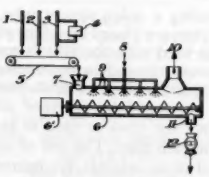
A reinforced composite having either a castable concrete matrix mass or a castable mortar matrix mass is disclosed. The matrix mass has about 300 lbs. to about 900 lbs. per cubic yard of hydraulic cement; about 220 lbs. to about 450 lbs. per cubic yard of water; about 0.1 to about 10.0% by volume per cubic yard of a plurality of discontinuous reinforcing filaments; about 40 lbs. to about 450 lbs. per cubic yard of finely divided pozzolan type material; and aggregate in a sufficient amount by volume to provide a total of 1 cubic yard of matrix mass.

3,834,917

PRODUCTION OF SYNTHETIC ANHYDRITE

Bernhard Spreckelmeyer, Leverkusen, Friedrich Hinsche, Leverkusen-Bayerwerk, and Werner Schabacher, Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Jan. 26, 1973, Ser. No. 326,755
Claims priority, application Germany, Feb. 3, 1972, P 22 05 028.8
Int. Cl. C04b *11/00*
U.S. Cl. 106—109 7 Claims



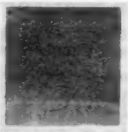
Treatment of the kiln residue which is formed during hydrogen fluoride production by the reaction of fluorspar with concentrated sulphuric acid in a hot furnace by the steps of adding a neutralizing agent to the kiln residue while at an elevated temperature, evaporation cooling the mixture to a temperature of 80 to 150° C. and grinding the cooled kiln residue after water vapour removal to obtain a pneumatically transferable, free-flowing synthetic anhydrite.

3,834,918

RAW BATCH FOR FORMING POROUS ARCHITECTURAL STRUCTURES AND METHOD OF PREPARING SAME

Shinobu Uogaeshi, 723–5, Gojyono-machi, Kashiwara, Nara, Japan

Filed June 19, 1973, Ser. No. 371,474
Claims priority, application Japan, June 30, 1972, 47/65,022
Int. Cl. C08h *17/68*
U.S. Cl. 106—122 2 Claims



A raw batch containing fine bubbles homogeneously dispersed therein, said batch being suitably used for the formation of porous architectural structures, said batch comprising a homogeneous mixture of 100 parts by weight of a hydraulic substance, 0.0001–0.1 part by weight of a blowing agent, 0.001–1.0 part by weight of a foam stabilizer and 70–200 parts of water, and a method for production thereof.

3,834,919

SOLID DEFOAMER FOR STARCH

Edward T. Parker, Inkster, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

No Drawing. Filed June 27, 1973, Ser. No. 373,995
The portion of the term of the patent subsequent to Apr. 30, 1991, has been disclaimed
Int. Cl. C08b *27/04*, *27/42*
U.S. Cl. 106—214 3 Claims

A solid, particulate defoamer consisting of a diatomaceous earth and a surface active mixture of conjugated polyoxyethylene - polyoxypropylene compounds when added during manufacture of starch controls the amount of foam produced when using aqueous slurries of the starch as a surface sizing agent for various grades of paper, or as a binder for pigmented coatings for papers and other cellulosic fibrous products.

3,834,920

OIL BASED COATING COMPOSITION

Henry J. Rose, 5 Logan Terrace, Danville, Ill. 61832

No Drawing. Filed Mar. 9, 1972, Ser. No. 233,315
Int. Cl. C08h *9/00*, *17/28*, *17/34*
U.S. Cl. 106—267 3 Claims

Sausages, such as frankfurters and bolognas, formed in synthetic casings are more easily peeled when the casings are provided with an internal coating of a coating composition comprising a food grade mineral oil in admixture with an acetylated fatty monoglyceride and about 5–30% of an alkoxylated type surfactant which is poorly soluble in mineral oil. The coating composition is preferably applied to the interior of the casing as a lubricant during the shirring of the casing on a conventional shirring machine. Other methods of internal coating which are

well known in the art may likewise be used for application of the coating solution.

3,834,921

LOW SURFACE AREA PIGMENTS

Robert Kenneth Mays, Havre De Grace, and Lowell Edwin Hackbarth, Bel Air, Md., assignors to J. M. Huber Corporation, Locust, N.J.

No Drawing. Filed Oct. 7, 1971, Ser. No. 187,580

Int. Cl. C09c *1/28;* C08h *17/04*

U.S. Cl. 106—288 B 1 Claim

An improved functional filler and extender pigment in alkyl ketene dimer sized alkaline paper, method of manufacturing said pigment, and method of addition.

3,834,922

PRODUCTION OF CHLORINE-CONTAINING COPPER PHTHALOCYANINES

Edward E. Jaffe, Union, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Original application Nov. 11, 1971, Ser. No. 197,978, now Patent No. 3,770,765. Divided and this application July 2, 1973, Ser. No. 375,942

Int. Cl. C08h *17/14*

U.S. Cl. 106—288 Q 2 Claims

Chlorine-containing pigmentary copper phthalocyanines are prepared via the phthalonitrile synthesis using as the solvent a member from a specified group of organic sulfones. The product may be used as such or as a stabilizer for chlorine-free copper phthalocyanine pigment.

3,834,923

TITANIUM DIOXIDE PIGMENTS AND FILLERS

Jonathan Howard Hodgkin, Burwood, Victoria, David Geoffrey Hawthorne, South Oakleigh, Victoria, Jean Drummond Swift, Olinda, Victoria, and David Henry Solomon, Glen Waverley, Victoria, Australia, assignors to Commonwealth Scientific and Industrial Research Organization

No Drawing. Filed Feb. 8, 1972, Ser. No. 224,606

Claims priority, application Australia, Feb. 10, 1971, 3,979/71, 3,981/71, 3,983/71, 3,985/71

Int. Cl. C09c *1/36*

U.S. Cl. 106—300 9 Claims

A method of modifying the surface properties of titanium dioxide pigments and fillers by forming on the particles a surface coating of an aluminium compound, the coating having a significant number of acidic sites with pKa values of less than 2.8.

3,834,924

PROCESS FOR MANUFACTURING SURFACE MODIFIED INORGANIC PIGMENTS

Thomas A. Grillo, Macon, Ga., assignor to J. M. Huber Corporation, Locust, N.J.

Filed June 8, 1972, Ser. No. 263,729

Int. Cl. C08h *17/04;* C09c *1/28*

U.S. Cl. 106—308 N 7 Claims

An improved process for producing surface modified, finely divided inorganic pigments, is disclosed. The process includes the addition of an organosilane to a high solids content aqueous dispersion of an inorganic pigment in a mixing zone or apparatus, such as a screw pump or extruder, to yield a thick, flowable plastic-type mass suitable for extrusion and drying. Inorganic pigments that may be advantageously surface modified include hydrated or anhydrous silicas, metal silicates, sodium alumino silicates, finely divided particulate clays, and the like. The organosilanes comprise amino organosilanes such as aminopropyltriethoxysilane, etc. The process of the invention eliminates the need for filtration, common to prior known techniques, the loss of silanes in the filtrate and otherwise streamlines the production operation.

3,834,925

TRANSFER MATERIAL

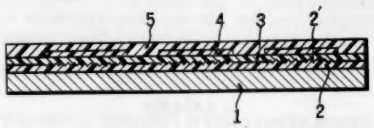
Kozo Matsumura and Sigeki Ito, Otokuni, Japan, assignors to Nissha Printing Co., Ltd., Kyoto Prefecture, Japan

Continuation-in-part of abandoned application Ser. No. 118,297, Feb. 24, 1971. This application Aug. 18, 1972, Ser. No. 281,964

Claims priority, application Japan, Mar. 20, 1970, 45/23,790, 45/27,037

Int. Cl. B41m *3/12, 3/06*

U.S. Cl. 117—3.4 13 Claims



A transfer material comprising: a base sheet member; a matting layer disposed upon said base sheet member; a stripping layer disposed upon said matting layer; a design print disposed upon said stripping layer; and an adhesive ink layer covering said design print at the printed area and the remaining portion of said stripping layer at the unprinted area. The solvent included in said design print or said adhesive ink layer migrates to the boundary between said matting layer and said stripping layer and makes a latent image of said design print which may be developed by releasing said base sheet member and said matting layer owing to the difference of dullness of the transferred surface between the printed area and the unprinted area.

3,834,926

METHOD OF MAKING A COLOR PICTURE TUBE

Santokh S. Labana, Dearborn Heights, Amos Golovoy, Westland, and Yun Feng Chang, Plymouth, Mich., assignors to Ford Motor Company, Dearborn, Mich.

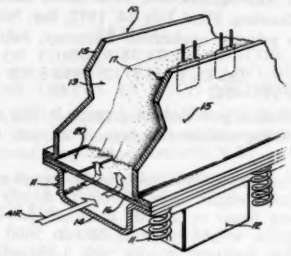
No Drawing. Filed May 17, 1972, Ser. No. 254,201

Int. Cl. B44d *1/094;* H01j *9/20*

U.S. Cl. 117—17 9 Claims

In manufacturing a color picture tube, a plurality of color phosphor dots are placed on a face plate of the tube. A shadow mask used with the tube is made with a plurality of apertures arranged in a predetermined pattern. Each of these apertures have a predetermined size. The predetermined size of each aperture is reduced to a smaller size when the mask is used in placing the phosphor dots on the face plate. The size of each of the apertures is returned to its original, predetermined size when the mask is used for operating the color tube. This disclosure teaches an improvement in the method of reducing and, thereafter, returning the size of the apertures to the predetermined size. The improvement includes applying a powder coating composition to the shadow mask.

3,834,927
FLUIDIZED BED COATING METHOD
Gordon A. Putney, New Berlin, Wis., assignor to Koerper Engineering Associates, Inc., Milwaukee, Wis.
Continuation-in-part of abandoned application Ser. No. 163,312, July 16, 1971. This application July 27, 1973, Ser. No. 383,381
Int. Cl. B44d *1/095*
U.S. Cl. 117—21 5 Claims



A bed of heat fusible plastic material in pulverulent or particulate form is fluidized by simultaneously vibrating it and aerating the same from the bottom. Aerating gas is constrained to enter the bottom of the bed at a localized influx zone that is smaller in area than the upper free surface of the bed. The influx zone is situated to effect continuous migration of the pulverulent or particulate material along a generally circular path, a portion or component of which extends horizontally through the upper strata of the bed, to thereby prevent the formation of geysers and define a smooth upper free surface for the bed.

3,834,928
PROCESS FOR PRODUCING PHOTOGRAPHIC MATERIAL
Sumitaka Tatsuta and Wataru Ueno, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
No Drawing. Filed Dec. 28, 1971, Ser. No. 213,182
Claims priority, application Japan, Dec. 28, 1970, 46/120,542
Int. Cl. B41m *5/14;* G03c *1/78*
U.S. Cl. 117—34 8 Claims

A process for production of a photographic material which comprises the steps of first undercoating an aqueous gelatin solution or a dispersion of gelatin in an organic solvent onto a stretched high molecular weight film having roughened surface, then heat-treating the resultant film at a temperature in the range of from $T_g-40°$ C. to $T_g+40°$ C., thereafter applying to the film an emulsion or suspension containing gelatin as a binder. (T_g being a glass transition temperature of the film-composing resin used.)

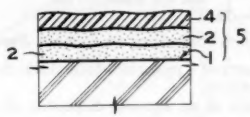
3,834,929
COLOR DEVELOPER SHEET FOR PRESSURE SENSITIVE RECORDING PAPER
Takao Hayashi and Hajime Kato, Fujinomiya, and Sadao Ishige, Minami Ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
No Drawing. Filed Dec. 16, 1971, Ser. No. 208,894
Claims priority, application Japan, Dec. 26, 1970, 45/118,978
Int. Cl. B41m *5/22*
U.S. Cl. 117—36.2 7 Claims

A color developer sheet for pressure sensitive recording paper comprising a color developer layer containing a metallic compound of a phenol compound, said phenol compound pKa below 8.

3,834,930
METHOD OF DEVELOPING ELECTROSTATOGRAPHIC IMAGES
Alan B. Amidon, Joseph Mammino, and Robert M. Ferguson, Penfield, N.Y., assignors to Xerox Corporation, Stamford, Conn.
No Drawing. Application Dec. 18, 1970, Ser. No. 99,646, which is a continuation-in-part of abandoned application Ser. No. 839,801, July 1, 1969. Divided and this application Sept. 25, 1972, Ser. No. 292,002
Int. Cl. G03g *9/04, 13/10*
U.S. Cl. 117—37 LE 5 Claims

A method of development of an electrostatic latent image is given wherein a chemically stable, nonaqueous, ambipolar, liquid developer comprising an oleaginous vehicle, solid colorant particles, a dispersant soluble in the liquid developer which is capable of substantially suppressing background deposits, and a fixing agent miscible with the liquid which penetrates the copy paper is employed to develop an electrostatic latent image by presenting the developer to the image bearing surface by an applicator having a substantially uniformly patterned surface of raised portions and depressed portions which contain the developer.

3,834,931
DECORATIVE LAYER AND A METHOD OF PRODUCING THE SAME
Takatsugu Iwai, Tokyo, and Hiroshi Takeda, Kyoto, Japan, assignors to Kajima Kensetsu Kabushiki Kaisha, Tokyo, and Daichi Kogyo Seiyaku Kabushiki Kaisha, Kyoto, Japan
Filed June 20, 1972, Ser. No. 264,615
Claims priority, application Japan, June 25, 1971, 46/46,685
Int. Cl. B32b *13/04;* B44d *1/16*
U.S. Cl. 117—45 22 Claims



A decorative layer and a method for producing the same, in which a mortar composition comprising in admixture hydraulic cement, aggregate, synthetic resin emulsion and water is directly applied onto the surface of a mineral, wood or metal substratum, and then a surface layer consisting of synthetic resin and organic solvent therefor is formed on the surface of mortar layer thus applied, either one or both of said surface layer and said mortar composition containing inorganic pigment.

3,834,932
METHOD OF FORMING PLASTIC SANDWICH STRUCTURES
Karl Brandl, Ruschlikon, Switzerland, assignor to Lonza Ltd. Switzerland
No Drawing. Filed Aug. 5, 1971, Ser. No. 169,528
Claims priority, application Switzerland, Aug. 28, 1970, 12,901/70
Int. Cl. B32b *27/08, 27/36*
U.S. Cl. 117—47 9 Claims

Method of improving the processability and adhesion characteristics of foamed plastics used as core material for plastic sandwich structures, wherein the core of foamed plastic is coated with a coating material of reinforced, unsaturated polyester resin which contains styrene as cross-linking component, a hardener and an accelerator. In accordance with the invention and prior to applying the coating material to the core, an accumulation of accelerator is provided in the contact zone between the core and

the coating material for promoting cold-hardening of the coating material. The hardening of the coating material in the contact zone is thus accelerated.

3,834,933

METHOD OF MAKING A METAL COATED ARTICLE WITH A PROTECTIVE FILM

Pieter Voogel, Middelweg 144, Wassenaar, Netherlands

No Drawing. Filed Oct. 26, 1971, Ser. No. 192,616

Claims priority, application Netherlands, Oct. 29, 1970, 7015901

Int. Cl. C23c *1/00;* **B44d** *1/14*

U.S. Cl. 117—71 M **3 Claims**

The method of forming a protective film on hot-dip metal coated articles, and more particularly articles coated with zinc, but those coated with a metal of the group consisting of tin, lead, aluminum and alloys thereof too, by hot-dip coating an article in a pot comprising a molten metal, directing a spray of paint directly against the solidified metallic coating while the latter is still hot from the hot-dip treatment, said paint comprising flowing agents not showing any boiling phenomenon at the temperature the articles have at the time of applying the paint.

3,834,934

ADHESION OF FIBROUS MATERIAL TO RUBBER

Raymond Broisman, Linden, N.J., assignor to American Cyanamid Company, Stamford, Conn.

No Drawing. Application Mar. 22, 1971, Ser. No. 127,026, now abandoned, which is a division of application Ser. No. 848,690, Aug. 8, 1969, now Patent No. 3,644,256, dated Feb. 22, 1972. Divided and this application Feb. 1, 1973, Ser. No. 328,584

Int. Cl. B32b *25/08*

U.S. Cl. 117—76 T **4 Claims**

A composition comprising an aqueous dispersion of

(A) 50–95 parts of a resorcinol-formaldehyde-latex adhesive composition,

(B) 5–50 parts of an aqueous dispersion of 10–70% of the reaction product of

(1) a composition derived by reacting a triallyl cyanurate composition having 0.05% to 3.0% ring-bound chlorine, with 6–10 moles of resorcinol per mole of cyanurate; and

(2) 0.2 to 0.6 mole of formaldehyde per mole of resorcinol in (1).

These compositions are useful in bonding rubber to reinforcing fibers.

3,834,935

ETHOXYLATED POLYBUTYLENE GLYCOLS AS FIBER LUBRICANTS

Richard H. Symm and Benny G. Barron, Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed May 1, 1972, Ser. No. 248,959

Int. Cl. C10m *3/14*

U.S. Cl. 117—138.8 B **5 Claims**

Valuable fiber lubricants are compounds of the formula

$$Y\{(C_4H_8O)_n—(C_2H_4O)_m—H\}_x$$

wherein Y is the residue formed by the removal of x atoms of active hydrogen from an initiator compound YH_x, x is an integer 1–5, n is an integer at least 2, such that the total oxybutylene content, nx moles, is about 6–50 and m is an integer, at least 1, such that the total oxyethylene content, mx moles, is about 2–200 or more, n and m being so chosen that the oxyethylene content constitutes about 20–75% by weight of the total oxyalkylene content. They are especially useful as lubricants for synthetic fibers, such as polyester, polyamide and acrylic fibers.

3,834,936

DRESSING LEATHER

Walter Schroer, Cologne, Johannes Eimer, Leverkusen, and Gunter Mertens, Opladen, Germany, assignors to Bayer Aktiengeselschaft, Leverkusen, Germany

No Drawing. Filed July 24, 1972, Ser. No. 274,153

Claims priority, application Germany, July 29, 1971, P 21 38 016.5

Int. Cl. B44d *1/32;* **C09d** *3/72*

U.S. Cl. 117—142 **2 Claims**

A process is provided for dressing leather and artificial leather using solutions in organic solvents of combinations of

(1) Polyurethanes with terminal hydroxyl groups in the molecular weight range of 5000 to 40,000 prepared by reacting linear or slightly branched polyesters in the molecular weight range of 500 to 5000 which have terminal hydroxyl groups with 3-isocyanato-3,5,5-trimethyl-cyclohexylisocyanate,

(2a) 15 to 100% by weight, based on polyurethane, of vinyl chloride copolymers in the molecular weight range of 25,000 to 150,000 consisting of 70 to 99.5% by weight of vinyl chloride units, 0 to 30% by weight of vinyl alcohol units and/or 0 to 30% by weight of vinyl acetate units and/or 0 to 30% by weight of units corresponding to the copolymerization of α,β-unsaturated mono- or dicarboxylic acids or their esters or semiesters and 0 to 30% by weight, based on polyurethane, of nitrocellulose which may contain plasticizer, or

(2b) 30 to 130% by weight, based on polyurethane, of nitrocellulose which may contain plasticizer and optionally 0 to 15% by weight, based on polyurethane, of vinyl chloride copolymers of the type mentioned under 2a and

(3) 0 to 30% by weight, based on polyurethane, of polyisocyanates.

3,834,937

METHOD OF PREPARING FLAME-RESISTANT PAPER HAVING A HIGH DELAMINATION RESISTANCE

Akira Karimori, Risaku Kodama, and Akio Kato, Fuji, Japan, assignors to Kabushiki Kaisha Kohjin, Tokyo, Japan

No Drawing. Filed Aug. 14, 1972, Ser. No. 280,409

Int. Cl. D21h *1/40*

U.S. Cl. 117—155 UA **10 Claims**

This invention relates to a method of preparing flame-resistant paper having a high delamination resistance characterized by impregnating paper with an oil-in-water dispersion comprising, a synthetic resin, a flame retardant, such as guanidine salts or water-soluble salts of guanylurea, at least one non-ionic surface active agent and, if desired, an alkylketene dimer.

3,834,938

FLAMEPROOF MOISTURE-RESISTANT COATINGS FOR ELECTRICAL COMPONENTS

Lawrence G. Bockstie, Jr., Bradford, Pa., assignor to Corning Glass Works, Corning, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 75,695, Sept. 25, 1970. This application May 26, 1972, Ser. No. 257,325

Int. Cl. C09d *3/28*

U.S. Cl. 117—201 **9 Claims**

Electrical components having protective coatings which are both flameproof and highly moisture-resistant, and

compositions for producing those coatings, are described. The coatings consist essentially of a monomethyl polysiloxane resin together with selected refractory fillers and suspension agents. Optional minor constituents include other silicone resins, tetraalkyl orthosilicates and pigments. The flameproof and moisture-resistant qualities of the coatings are due to their unique combination of refractory, hydrophobic and poromeric properties.

3,834,939

METHOD OF FORMING DOPED SILICON OXIDE LAYERS ON SUBSTRATES AND PAINT-ON COMPOSITIONS USEFUL IN SUCH METHODS

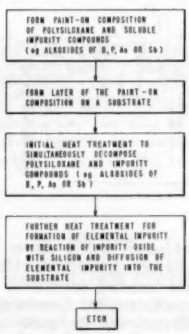
Klaus D. Beyer, Poughkeepsie, and Reginald F. Lever, Putnam Valley, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of abandoned application Ser. No. 12,573, Feb. 19, 1970. This application Aug. 4, 1972, Ser. No. 277,958

Int. Cl. B44d *1/18*

U.S. Cl. 117—201 **1 Claim**

Methods of forming impurity doped silicon oxide layers on semiconductor substrates by first forming a paint-on composition comprising a siloxane and a soluble impurity compound, such as alkoxides containing the suitable impurities such as B, P, As and Sb. A substrate coated with the paint-on composition is heat-treated in an oxidative atmosphere in order to change the coating to a layer containing silicon dioxide doped with an oxide of one or more of the impurity elements. A reactive siloxane polymer of a particular structure may be added to the paint-on composition to improve its pertinent characteristics. The impurity oxide contained in the silicon dioxide serves as a concentrated dopant source for diffusion. Thus, in the interface layer between silicon and the mixture of


FORM PAINT-ON COMPOSITION OF POLYSILOXANE AND SOLUBLE IMPURITY COMPOUNDS (eg ALKOXIDES OF B,P,As OR Sb)
FORM LAYER OF THE PAINT-ON COMPOSITION ON A SUBSTRATE
INITIAL HEAT TREATMENT TO SIMULTANEOUSLY DECOMPOSE POLYSILOXANE AND IMPURITY COMPOUNDS (eg ALKOXIDES OF B, P, As OR Sb)
FURTHER HEAT TREATMENT FOR FORMATION OF ELEMENTAL IMPURITY BY REACTION OF IMPURITY OXIDE WITH SILICON AND DIFFUSION OF ELEMENTAL IMPURITY INTO THE SUBSTRATE
ETCH

the impurity oxide and silicon oxide the silicon reacts with the respective oxide to form elemental impurities and SiO_2.

Under siloxanes we understand a class of compounds distinguished by covalent linkage of silicon-oxygen-silicon with the other electrovalence requirements satisfied by organic and/or inorganic substituents. The term polysiloxanes refers to multiple units of the basic siloxane unit which combine to form a backbone structure of molecules having various molecular weights.

3,834,940

METHOD OF REFINING AN ENZYMATICALLY PRODUCED FRUCTOSE CONTAINING SOULTION

Khaja Khaleeluddin and Robert Fredric Sutthoff, Clinton, and William Junior Nelson, Camanche, Iowa, assignors to Standard Brands Incorporated, New York, N.Y.

No Drawing. Original application Jan. 28, 1971, Ser. No. 110,748, now abandoned. Divided and this application Oct. 30, 1972, Ser. No. 302,142

Int. Cl. C13d *3/14;* **C13k** *1/00, 9/00*

U.S. Cl. 127—46 A **4 Claims**

An enzymatically produced fructose-containing solution is refined by sequentially treating the solution with activated carbon, maintaining the solution at an acidic pH and contacting the solution with a strong acid cation exchange resin in the hydrogen form and then with a weak base anion exchange resin in the free base form.

3,834,941

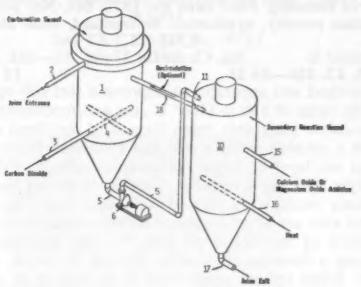
PROCESS FOR THE PURIFICATION OF SUGAR-BEET JUICE AND THE REDUCTION OF LIME SALTS THEREIN

Karlheinz W. R. Schoenrock, Chia-Lung Hsieh, and Hugh G. Rounds, Ogden, Utah, assignors to The Amalgamated Sugar Company, Ogden, Utah

Filed May 17, 1972, Ser. No. 254,215

Int. Cl. C13d *3/00*

U.S. Cl. 127—50 **6 Claims**



Methods of purifying a raw sugar juice involving alkalizing the juice, over-carbonating the juice to reduce the alkalinity to below about 0.065% CaO equivalent and thereafter re-alkalizing with an alkaline earth metal oxide.

3,834,942

SEALED GALVANIC BATTERY CELL AND METHOD FOR ITS MANUFACTURE

Werner Tietze, Hagen, Germany, assignor to Varta Aktiengesellschaft

Filed June 28, 1971, Ser. No. 157,556

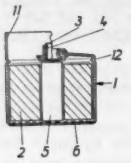
Claims priority, application Germany, June 26, 1970, P 20 31 714.0

Int. Cl. H01m *35/04*

U.S. Cl. 136—14 **9 Claims**

In a sealed galvanic battery cell, such as an accumulator cell, the electrode set is accommodated in a can or the like tubular container which, with respect to its originally straight axial length, protrudes over the inserted electrode set. The protruding top portion of the container is plastically deformed toward the axis so as to form an end cover integral with the main portion of the container. An annular contact rivet is gas-and-liquid tightly inserted

into a central opening of the end cover. The cell is produced by first inserting the electrode set into the container, placing the annular rivet onto a mandrel portion axially



protruding from the set, and then deforming the top portion of the container toward the center into engagement with the annular rivet which contains electrically insulating and sealing means.

3,834,943

ELECTROLYTE-ELECTRODE UNIT FOR SOLID-ELECTROLYTE FUEL CELL AND PROCESS FOR THE MANUFACTURE THEREOF

Paul Van den Berghe, Satigny, and Helmut Tannenberger, Geneva, Switzerland, assignors to Compagnie Francaise de Raffinage, Paris, France

No Drawing. Filed June 16, 1972, Ser. No. 263,600
Claims priority, application Switzerland, June 18, 1971, 8,911/71
Int. Cl. H01m *27/00*
U.S. Cl. 136—86 D **11 Claims**

Method and apparatus to improve a fuel cell operating in the range of 800 to 1100° C., the gas-impermeable solid electrolyte preferably being formed of stabilized zirconia with a suitable metal anode and a cathode formed of at least one layer of doped indium oxide affixed to the electrolyte. The improvement consisting of having the doped indium oxide layer formed with dendrites whose principal axes are at least approximately perpendicular to the surface of the electrolyte with the axes forming trunks having a diameter of between 500 and 10,000 A., so that said doped indium oxide layer is permeable to gas and the thickness is at most equal to 0.02 cm. The improvement also includes the method of obtaining such a doped indium oxide layer with dendrites by utilizing an electron beam to vaporize a target of the doped indium oxide and condense the latter on the electrolyte which has been heated to at least 300° C. under total gas pressure of between 10^{-6} and 10^{-2} mm. Hg, containing an oxygen partial pressure of at least 10^{-6} mm. Hg. A further improvement of the foregoing includes the use of a chromite layer between the electrolyte and the indium oxide layer to prevent the diffusion of the one into the other.

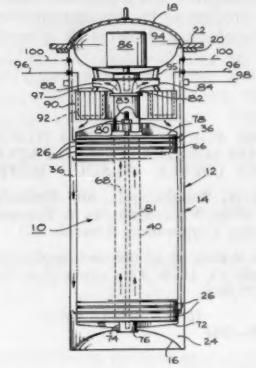
3,834,944

MULTI-CELL METAL-FLUID BATTERY

Edward Dennison, Waterford, Conn., assignor to Yardney International Corp., Los Angeles, Calif.

Filed Sept. 10, 1973, Ser. No. 396,010
Int. Cl. H01m *29/04*
U.S. Cl. 136—86 A **9 Claims**

An improved, multi-cell metal-fluid battery comprises a container having a sidewall and endwalls defining a hollow interior within which are stacked a plurality of cells electrically connected in series, each cell containing a pair of electrodes and electrolyte activated upon contact with a fluid. Fluid flow control means are provided which distribute moisture to the electrolyte and an oxygen-containing gas to the cells to sustain the reaction in the cells. The fluid flow control means include means of separating each of the cells in the stack to provide a transverse fluid flow passageway therebetween, circulation means such as a blower activated by a motor, means spacing the stack of cells inwardly of the sidewall to define a peripheral fluid flow passageway, central openings in the cells defining a return passageway, fluid supply means and fluid cooling means such as a cooling core.

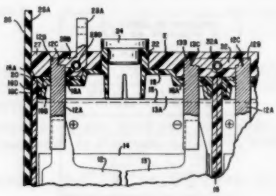


3,834,945

WATER-COOLED INDUSTRIAL BATTERY

Henry E. Jensen, Lafayette Hill, Pa., assignor to Eltra Corporation, Toledo, Ohio

Filed Feb. 5, 1973, Ser. No. 329,878
Int. Cl. H01m *11/00*
U.S. Cl. 136—161 **1 Claim**



An industrial vehicular motive power battery is disclosed which incorporates means for circulating cooling or heating fluids in the intercell connectors of the battery cells, the intercell connectors are then encapsulated with a suitable resin to obviate leakage under adverse atmospheric conditions and contamination when higher battery voltages are utilized. The resin encapsulation also protects personnel from such higher voltages when seated on the battery to operate the vehicle.

3,834,946

METHOD OF MAKING A STORAGE BATTERY

Robert F. Amlie, Milwaukee, and Eugene Yehuda Weissman, Glendale, Wis., assignors to Globe-Union Inc.

No Drawing. Filed July 12, 1972, Ser. No. 271,169
Int. Cl. H01m *1/00*
U.S. Cl. 136—176 **5 Claims**

A charged storage battery having good shelf life and activation performance characteristics upon the addition of electrolyte is made by forming the battery in the usual manner in forming electrolyte, permitting the formed

plates to stand in the forming acid while boosting the plates with an electrical charge, removing the electrolyte from the formed storage battery, and filling the battery with water. The water can be left in the storage battery and the battery stored or shipped in this manner. In a preferred manner, the water is removed from the battery after standing in it for approximately 5 minutes to 1 hour, the negative plates are passivated by introducing oxygen into the storage battery, and then the battery is sealed, stored and/or shipped.

3,834,947

TWO-STAGE PROCESS OF SURFACE-HARDENING WORKPIECES OF HARDENABLE FERROUS ALLOYS

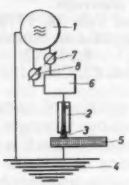
Karl Swoboda, Vienna, and Alfred Kulmburg and Rupert Blöch, Kapfenberg, Austria, assignors to Gebr. Bohler & Co. Aktiengesellschaft, Kapfenberg, Austria

Filed Sept. 21, 1971, Ser. No. 182,420

Claims priority, application Austria, Sept. 21, 1970, A 8,499/70

Int. Cl. B23k *9/00;* C21d *7/04*

U.S. Cl. 148—12 2 Claims



An electric circuit is operated at a stabilized, high frequency. A cold plasma is produced, which closes said circuit. Energy is supplied by said plasma at a uniform rate to succesive adjoining elemental surface areas of a workpiece of a hardenable ferrous alloy to form in said elemental surface areas metastable austenitic portions having constant cross-sectional shapes and constant properties.

3,834,948

DUCTILE, WELDABLE HIGH-STRENGTH-STEEL WIRE AND METHOD FOR PRODUCING SAME

Kenneth G. Brickner, O'Hara Township, Allegheny County, and Edward B. Stanley, Washington Township, Westmoreland County, Pa., assignors to United States Steel Corporation

No Drawing. Filed Oct. 13, 1971, Ser. No. 189,003

Int. Cl. C21d *1/58, 7/02, 9/52*

U.S. Cl. 148—2 4 Claims

A ductile, weldable, high-strength steel wire containing 0.12 to 0.30% C, 0.30 to 1.60% Mn, and 0.0005 to 0.003% B, balance Fe is produced by employing cold reductions of from about 1 to 60%, austenitizing with the range A_3 to 1900° F., and then quenching in oil. The processing variables employed are balanced with the composition and the final diameter of the wire in accord with two equations, to achieve a superior combination of high strength and ductility.

3,834,949

HOT ROLLED FLAT STEEL ARTICLE FOR CRYOGENIC SERVICE AND METHOD FOR PRODUCING SAME

William E. Heitmann, Dolton, and Thomas G. Oakwood, Park Forest South, Ill., assignors to Inland Steel Company, Chicago, Il.

No Drawing. Filed Feb. 14, 1973, Ser. No. 332,413

Int. Cl. C21d *7/14;* C22c *39/36*

U.S. Cl. 148—12 11 Claims

A hot rolled, flat steel article including 2.0–3.0 wt. percent nickel, 0.4–1.0 wt. percent manganese, 3.0–3.5 wt. percent nickel plus manganese, 0.2–0.8 silicon, 0.01–0.02 columbium and 0.02–0.03 vanadium. Processing includes a hot roll finishing temperature below 1700° F., a finishing deformation of at least 30%, and normalizing. Finishing above 1700° F. or a deformation less than 30% is followed by two normalizing operations. The resulting article has strength and toughness rendering it useful at low temperatures in the range —150° F. to —250° F.

3,834,950

FERROUS ALLOYS

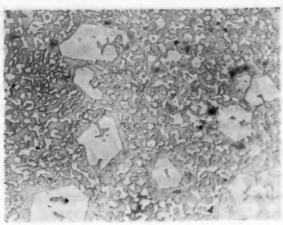
Michel Joseph Feltz, 14e Rue Hotteux, Ayeneux, Belgium

Filed June 27, 1972, Ser. No. 266,703

Claims priority, application Luxembourg, June 29, 1971, 63,431

Int. Cl. C22c *39/14, 39/20*

U.S. Cl. 148—31 8 Claims



A heat treated cast ferrous alloy characterized by high chromium and carbon content and having a metallographic structure evidencing a high content of hard eutectic and hypereutectic chromium carbides and a martensitic solid solution free of secondary carbides. The metallographic structure is obtained by the selection of alloying elements in the proper proportion and heat treatment.

3,834,951

TRIP STEEL FOR SPRINGS

Klas-Erik Jakenberg, Hagfors, Sweden, assignor to Uddeholms Aktiebolag, Hagfors, Sweden

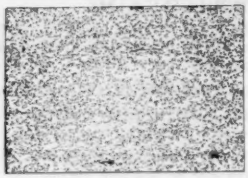
Continuation of abandoned application Ser. No. 737,779, June 17, 1968. This application Aug. 31, 1971, Ser. No. 176,710

Int. Cl. C21d *9/02*

U.S. Cl. 148—36 1 Claim

This invention relates to elastic elements, primarily springs on which the required standards of fatigue resistance and/or flatness, etc. are of a high order. More

specifically, this invention relates to springs which are produced from a steel alloy, the composition of which is such



that in a temperature range between 500 and 700° C. the steel may have a matrix that is primarily ferritic.

3,834,952

METHOD OF MANUFACTURING COLD-ROLLED NONORIENTED ELECTRO-6 MAGNETIC STEEL SHEET AND PRODUCT ELECTROMAGNETIC STEEL SHEET

Izumi Matsushita, Kiyoshi Tanada, and Osamu Honjo, Himji, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Mar. 29, 1971, Ser. No. 128,673
Claims priority, application Japan, Mar. 30, 1970, 45/26,295
Int. Cl. H01f *1/04*
U.S. Cl. 148—112 **20 Claims**

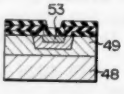
In the method of manufacturing a cold-rolled non-oriented electromagnetic steel sheet comprising Si in an amount of 1.0–4.0% by weight, acid soluble Al in an amount of 0.1–3.0% by weight and the rest being iron, comprising the ordinary production steps of decarburization, at least one cold-rolling step, and a final heat-treatment subsequent to the final cold-rolling step (including skin pass or temper rolling), the improvement which comprises the decarburization treatment being carried out in the production steps before the final cold-rolling step, the inner oxidized layer present in the surface part of the steel being removed after the decarburization treatment but before the final cold-rolling step; all the heat-treatments after the removal of the inner oxidized layer being carried out in a non-oxidizing atmosphere which contains water and hydrogen in such amounts that the ratio of the partial pressure of steam formed during the heat-treatment steps to the partial pressure of hydrogen is less than 0.05 to avoid the re-forming of an inner oxidized layer.

3,834,953

SEMICONDUCTOR DEVICES CONTAINING AS IMPURITIES As AND P OR B AND THE METHOD OF MANUFACTURING THE SAME

Masakatsu Nakamura, Toshio Yonezawa, and Taketoshi Kato, Yokohama, Masaharu Watanabe, Kawasaki, and Minoru Akatsuka, Yokohama, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Continuation of abandoned application Ser. No. 78,819, Oct. 7, 1970. This application May 23, 1973, Ser. No. 363,132
Claims priority, application Japan, Feb. 7, 1970, 45/10,376; Mar. 2, 1970, 45/17,103; Mar. 13, 1970, 45/20,826; Mar. 28, 1970, 45/25,627
Int. Cl. H01l *7/44*
U.S. Cl. 148—186 **8 Claims**



A semiconductor device comprising a high impurity concentration region, the impurity consisting of arsenic and at least one impurity other than arsenic. The number of atoms of the arsenic is smaller than that of the other impurity.

3,834,954

PROCESS FOR THE PRODUCTION OF A WATER-BEARING EXPLOSIVE COMPOSITION

Eirik Samuelsen, Lierbyen, Norway, assignor to Dyno Industrier A.S., Oslo, Norway

No Drawing. Filed Mar. 2, 1972, Ser. No. 231,376
Claims priority, application Norway, Mar. 10, 1971, 907
Int. Cl. C06b *1/04*
U.S. Cl. 149—2 **11 Claims**

A process for the production of a water-bearing explosive composition, wherein a previously prepared, thickened solution or dispersion substantially comprising the oxidizing components of the explosive composition, is mixed with the combustible or oxygen consuming components of the explosive composition, characterized therein that also the oxygen consuming components are used in the form of a viscous or thickened solution or dispersion having nearly the same consistency as the oxidizing component mixture.

3,834,955

COATED AMMONIUM NITRATE

Richard Fox, Rosanna, Victoria, Keith Neill, Kew, Victoria, and Howard Tankey, Box Hill North, Victoria, Australia, assignors to ICI Australia Limited, Melbourne, Victoria, Australia

No Drawing. Filed Feb. 26, 1973, Ser. No. 336,075
Claims priority, application Australia, Mar. 10, 1972, 8,241/72
Int. Cl. C06b *19/02*
U.S. Cl. 149—7 **13 Claims**

An explosive composition of matter comprising a major proportion of at least one inorganic oxygen releasing salt characterized in that the said salt is coated with an essentially complete coating of material comprising a hydrocarbon substance having hydrophobic or water repellent characteristics.

3,834,956

SOLID PROPELLANT COMPOSITION CONTAINING LEAD AND LEAD COMPOUNDS

Dale F. Mellow, Salt Lake City, Utah, and Richard Winer, New Castle, Del., assignors to Hercules Incorporated, Wilmington, Del.

Filed Aug. 8, 1967, Ser. No. 661,495
Int. Cl. C06b *1/07*
U.S. Cl. 149—19.1 **11 Claims**

The use of lead and compounds thereof in high energy propellant formulations results in propellant systems having very high density-impulse and very high efficiency. This is achieved by adjusting the composition of the formulations such that the exhaust temperatures of the propellant are maintained above the vaporization temperature of the lead.

3,834,957

SOLVENT PROCESS FOR PRODUCTION OF COMPOSITE PROPELLANTS USING HEXANE AND HMX

John P. McDevitt, Accokeek, and Marguerite S. Chang, Forest Heights, Md., assignors to the United States of America as represented by the Secretary of the Navy

No Drawing. Filed May 14, 1970, Ser. No. 48,770
Int. Cl. C06d *5/06*
U.S. Cl. 149—19.4 **10 Claims**

A "solvent" process for the large scale production of the composite propellants employing HMX as an oxidant whereby a mixture of HMX and n-hexane is intimately mixed with a binder mixture and the n-hexane subsequently removed from the propellant mixture by vacuum evaporation.

3,834,958

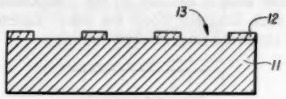
METHOD FOR ISOLATION OF CIRCUIT REGIONS IN MONOLITHIC INTEGRATED CIRCUIT STRUCTURE

Kenneth E. Bean, Richardson, and Paul S. Gleim, Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Original application Feb. 17, 1969, Ser. No. 799,721, now Patent No. 3,624,467. Divided and this application Dec. 17, 1970, Ser. No. 99,289

Int. Cl. H011 7/50

U.S. Cl. 156—8 4 Claims



Polycrystalline silicon having a needle-like oriented grain structure is found to have anisotropic electrical and thermal properties. A monolithic integrated circuit structure having a plurality of monocrystalline silicon islands is fabricated in a polycrystalline silicon matrix having such a grain structure, with the grain direction oriented to provide maximum electrical resistivity between the monocrystalline islands, and maximum thermal conductivity toward a header or other heat sink. In one embodiment, the monocrystalline islands and polycrystalline matrix are grown by vapor deposition of silicon on a monocrystalline substrate provided with a suitable masking pattern, whereby the polycrystalline material grows on the mask concurrently with the growth of monocrystalline silicon on the unmasked areas of the substrate.

3,834,959

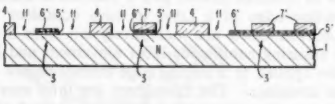
PROCESS FOR THE FORMATION OF SELF-ALIGNED SILICON AND ALUMINUM GATES

Robert H. Dennard, Croton-on-Hudson, and Dominic P. Spampinato, Ozone Park, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 30, 1972, Ser. No. 267,879

Int. Cl. H011 7/50

U.S. Cl. 156—11 22 Claims



A process for the simultaneous formation of self-aligned silicon gates and aluminum gates having self-aligned channel regions on the same wafer is disclosed. Basically, the process consists of the deposition of successive layers of silicon nitride and polycrystalline silicon over thick and thin silicon dioxide regions which are disposed on the surface of a semiconductor wafer. Polysilicon gates are delineated in the thin oxide regions. Subsequently, a chemically vapor deposited silicon dioxide layer is formed over the surface of the exposed silicon nitride layer and over the polycrystalline silicon gate regions. At this point, the CVD oxide is delineated to form an oxide mask which will permit the removal of silicon nitride down to the thin oxide at certain regions where diffusion windows are to be formed in exposed thin oxide regions which are subsequently removed by a dip etch. While the exposed thin oxide regions are masked by either silicon nitride portions or polycrystalline silicon gate regions, the masking regions of CVD oxide which protected the silicon nitride layer are simultaneously removed by the dip etch which opens the diffusion windows in the thin oxide regions. After a diffusion step which includes deposition of a phosphorous dopant in the diffusion windows from the vaporous phase and a drive-in step, a thermal oxidation step is carried out which covers the diffused window regions and the polysilicon gates and thick oxide regions leaving the exposed nitride portions unaffected. In a subsequent masking step, diffusion contact windows and silicon gates contact windows are opened. Then, metallization is deposited everywhere and delineated to form metal gates and contacts to both diffusions and silicon gates. Metal is delineated and formed in each of the exposed silicon nitride regions one of which is a self-aligned channel region for a metal gate field-effect transistor. Other metal gates for a charge coupled device are positioned by virtue of the presence of adjacent polysilicon gates and are insulated from the substrate by a thin oxide and nitride layer and from the silicon gates by a layer of thermally grown silicon dioxide on the surface of the silicon gates. The resulting structure includes a metal gate field-effect transistor, a self-aligned silicon gate field-effect transistor, and a charge coupled device on the same wafer. By using an additional masking step over that required for the formation of silicon self-aligned gates alone, metal gates which are either self-aligned by virtue of adjacent polysilicon gates or by virtue of the presence of a self-aligned channel are thus obtained. In addition, a random access charge coupled device which incorporates a metal transfer gate and a polysilicon storage plate is also disclosed. The structure results from the above described fabrication process and is structurally unique in that the metal gate is disposed immediately adjacent to a diffusion region which itself is disposed under a thick oxide layer. In addition, the polycrystalline silicon storage plate is spaced from the metal gate by a layer of thermally grown silicon dioxide.

3,834,960

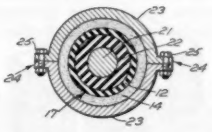
METHOD OF MAKING FUSIBLE AND ELECTRICAL CONDUCTIVE COATING

Winslow W. Prentice, Pawcatuck, and Markay H. Malootian, Quaker Hill, Conn., assignors to the United States of America as represented by the Secretary of the Navy

Filed Aug. 31, 1973, Ser. No. 393,534

Int. Cl. H01b 13/06, 13/22

U.S. Cl. 156—53 2 Claims



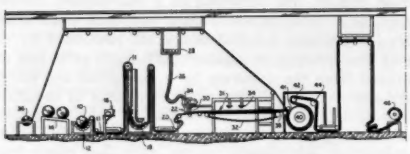
A conductive material formed on the surface of a polyethylene film comprises a homogeneous mixture of polyethylene powder, nickel powder, silver flake and polyethylene oxide of a high molecular weight. The conductive material is bonded by means of fusion to the polyethylene film to form a coating which is then bonded to the outer surface of a polyethylene cable.

3,834,961

METHOD OF PROMOTING SEPARATION BETWEEN A HEATED CURING SURFACE AND A BACKING MATERIAL

C. Edward Terry, Rockmart, Ga., assignor to Textile Rubber and Chemical Company, Inc., Dalton, Ga.

Continuation-in-part of application Ser. No. 197,022, Nov. 9, 1971, now Patent No. 3,806,385, which is a continuation-in-part of application Ser. No. 112,472, Feb. 3, 1971, now Patent No. 3,705,834, which in turn is a continuation-in-part of application Ser. No. 111,860, Feb. 2, 1971, now Patent No. 3,700,515. This application Jan. 24, 1973, Ser. No. 326,232
The portion of the term of the patent subsequent to Oct. 24, 1989, has been disclaimed
Int. Cl. D05c *15/00*
U.S. Cl. 156—72 9 Claims



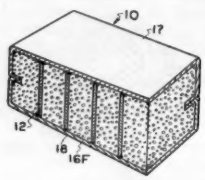
A urethane carpet backing material is cured on the heated surface of at least one heated drum. The surface of the drum is provided with a nonstick release agent to prevent or minimize any tendency of the carpet material to stick or adhere to the heated surface, and to permit the carpet material to be readily separated from the drum without damaging the urethane backing material or the surface of the drum. In the preferred embodiment, the urethane backing material serves as an adhesive between a tufted primary backing and a secondary backing. In an optional embodiment, the urethane backing material serves as an integral adhesive and secondary backing. When serving as an integral adhesive and secondary backing, foam cells in the urethane may be crushed to produce a relatively hard back for the carpet product or the cells may remain in the urethane to produce a relatively soft and cushioned back for the carpet product.

3,834,962

REINFORCED FOAMED-PANEL STRUCTURE

William P. Strumbos, 85 Middleville Road, Northport, N.Y. 11768

Filed Feb. 18, 1972, Ser. No. 227,397
The portion of the term of the patent subsequent to Feb. 22, 1989, has been disclaimed
Int. Cl. B32b *31/06, 31/12*
U.S. Cl. 156—79 8 Claims



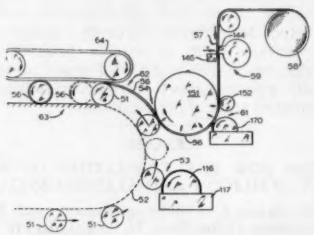
In the art of constructing reinforced foamed-panel structures, a method for treating the reinforcing elements of the panel structure during the manufacturing process with a self-contained force-generating foamable substance such that the elements can be shipped in an unexpanded state and a panel can be produced subsequently when required by activating the foamable substance. The force-generating substance is a stable, but potentially reactive, foamable material coated on selected portions of the reinforcing elements with the foamable reactants of the material isolated from one another by impermeable barrier means. These barrier means are ruptured or dissolved by suitable means to trigger the foaming reaction that provides the force to deploy the reinforcing elements such that a foamed panel having suitably located reinforcing means is produced. Because the foamable means for producing the panel are self-contained and can be remotely activated, structures can be made using the panel as a foamed-in-place core and in which, also, the foaming of the panel locks the components of the structure together and, if desired, to the components of other structure such that the need for other fastening means is thereby rendered unnecessary.

3,834,963

METHOD FOR APPLYING LABELS TO CONTAINERS

Wolfgang Hoffman, Modesto, Calif., assignor to B & H Manufacturing Company, Inc., Modesto, Calif.

Continuation-in-part of application Ser. No. 5,187, Jan. 23, 1970, now Patent No. 3,765,991. This application Feb. 14, 1972, Ser. No. 226,064
Int. Cl. B65c *3/08, 3/12*
U.S. Cl. 156—215 8 Claims



Method and apparatus for continuous high speed application of labels to containers wherein the adhesive is applied to a predetermined location upon each of a succession of contains moved past a vacuum drum applying the leading edge of a label to each container at such location. The labels are successively cut from a strip by means ensuring continuous label movement and have an adhesive applied to a trailing edge thereof before application to containers. The containers are then moved to a discharge station where the labels are wrapped about the containers.

3,834,964

PROCESSING OF A MULTIPLICITY OF WEBS TO ENHANCE THE MANUFACTURE OF MULTI-COMPONENT LAMINATES

Elmer Paul Blasing, Jr., Cincinnati, Ohio, assignor to Formica Corporation, Cincinnati, Ohio

No Drawing. Filed Oct. 17, 1972, Ser. No. 298,212
Int. Cl. B32b *31/18;* C09j *5/00*
U.S. Cl. 156—269 9 Claims

In the production of heat and pressure consolidated laminates which are impregnated with an impregnating resinous material and then formulated into packs ready for consolidation, a plurality of the same or different webs are simultaneously impregnated with said material and then preferably dried prior to formulation into said packs.

3,834,965

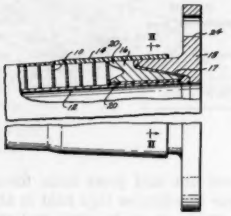
METHOD OF MAKING A LIGHTWEIGHT DUCT

David L. Seiwert, West Chester, and Thomas L. Hampton, Loveland, Ohio, assignors to General Electric Company

Original application Jan. 29, 1969, Ser. No. 794,952, now Patent No. 3,757,827. Divided and this application Oct. 18, 1972, Ser. No. 298,634

Int. Cl. C09j 5/00; F16l 9/14

U.S. Cl. 156—294 4 Claims



A lightweight composite duct having inner and outer shells with a celluar core therebetween is provided with a mounting ring. The mounting ring is bonded to a split, wedge ring which, in turn, is bonded to the thin-walled inner shell of the duct. In fabrication, the inner shell is telescoped over a mandrel. The mounting ring is telescoped over the inner shell and defines a V-shaped groove. A strip of adhesive material is wrapped about the split, wedge ring, and the wedge ring is then forced into the V-shaped groove. A woven mesh material in the adhesive strip provides accurate spacing between the split, wedge ring and the shell and between the split, wedge ring and the mounting ring as the split, wedge ring flexes radially to provide essentially uniform adhesive thickness regardless of tolerance variations in the mounting ring and the inner shell. Thereafter, a honeycomb core is bonded to the inner shell, and an outer shell is bonded to the core and the mounting ring.

3,834,966

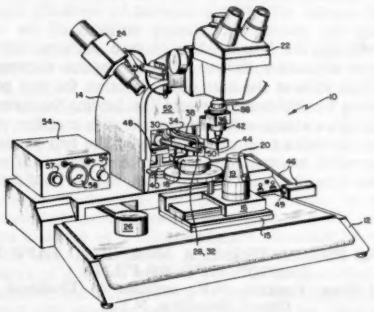
ADHESIVE BONDING SYSTEM

James E. Kelly, Melrose, Mass., assignor to Mech-El Industries, Inc., Woburn, Mass.

Filed Dec. 26, 1972, Ser. No. 318,207

Int. Cl. B32b 31/00

U.S. Cl. 156—379 8 Claims



This invention pertains to an adhesive bonding system for bonding miniature objects to a substrate utilizing an adhesive dispenser capable of dispensing minute quantities of adhesive; a vacuum powered tool to pick up and place the objects to be bonded on the adhesive; means to move the adhesive dispenser and the vacuum powered pickup and place tool sequentially into the work area; means to operate the adhesive dispenser and the vacuum powered pickup and place tool independently; an optical system for positive viewing and control of the dispensing of adhesive; and the pickup and placement of the objects to be bonded by an operator. Utilizing one of a series of interchangeable adhesive dispenser cartridges, this system permits the precisely controlled dispensing of minute quantities ranging from .001 inches in diameter and .0005 inches in thickness to .250 inches in diameter to .200 inches in thickness, of various adhesives, solder pastes, epoxies, and the like of varying viscosities at precise locations on a substrate. A novel dispenser cartridge for the smallest size units ranging from .001 inches in diameter and .0005 inches in thickness to .020 inches in diameter and .020 inches in thickness is also disclosed. This adhesive bonding system is used for bonding semiconductors and the other components to substrates or electrical leads in the manufacture of hybrid circuits, but is easily adaptable to other applications.

3,834,967

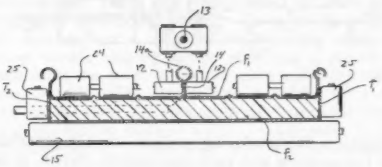
APPARATUS FOR FORMING FOAMED PANELS

William E. Lowery, Orinda, and Roger G. Jennings, Oakland, Calif., assignors to Control Building Systems, Inc.

Filed Apr. 30, 1971, Ser. No. 145,255

Int. Cl. B29b 5/04

U.S. Cl. 156—356 16 Claims



A continuous method for forming laminated panels, especially those having a foamed core of urethane, wherein a pair of panel facings are fed horizontally and in a relatively straight line while supported in spaced relation, one of said panels being driven and the other panel facing being connected to and correspondingly moved by the first, a setable mixture of foaming components being dispensed between said facings in a zig-zag pattern, and apparatus for carrying out the method to produce panels having a substantially uniform cell structure and minimum density gradients and being relatively free of voids.

3,834,968

INSTALLATION FOR MANUFACTURING STRATIFIED ISOTHERMAL PANELS

Paul Lamberet, Vonnas, Ain, France

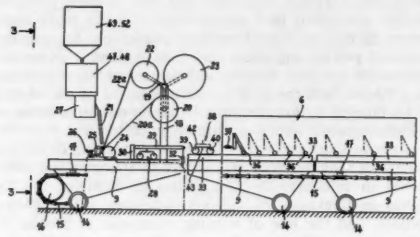
Filed Apr. 28, 1972, Ser. No. 248,538

Int. Cl. B32b 31/10

U.S. Cl. 156—389 8 Claims

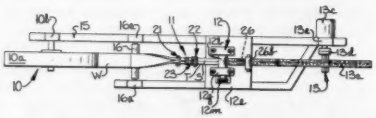
An installation for manufacturing isothermal panels of stratified material, notably for refrigerator vans, bodies of vehicles and the like, of the type comprising a core of rigid expanded material such as polyurethane sandwiched between two sheets of stratified material such as polyester. The installation comprises a pair of tracks, i.e. an outward track and a return track, along which successive adjacent tables are caused to travel past sta-

tions for depositing a resin mixture, a reinforcing textile, web, and an expanded sheet, for curing the resin, and



possibly for covering the opposite face of the panel with a resin mixture and a reinforcing textile web.

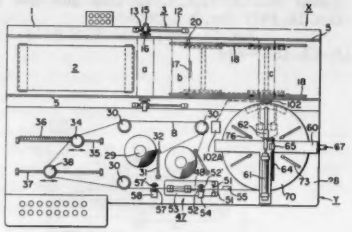
3,834,969
APPARATUS FOR FORMING A STRETCHABLE TUBULAR PACKAGING MATERIAL
Brendan L. Doll, Patterson, N.C., assignor to Cellu Products Company
Filed Feb. 3, 1972, Ser. No. 223,246
Int. Cl. B23d *25/02;* **B29d** *23/00;* **B32b** *31/00*
U.S. Cl. 156—466 **7 Claims**



Apparatus for producing resilient, readily stretchable tubes for receiving and packaging articles therein, including means for curving or bowing a sheet or web of flexible foam material to bring opposing side edges thereof into substantially collinear relationship. Means is provided for uniting the thus positioned side edges to form a tube from the web, and slitting means is provided for slitting the foam material in a pattern of spaced apart rows of spaced incisions so arranged that the tube may be stretched radially to receive therein an article of greater cross-sectional area than the initial internal cross-sectional area of the tube, and the tube then will recover into substantial conformance to the size and shape of the article therein.

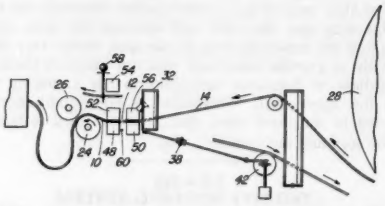
3,834,970
ADHESIVE TAPE STICKING MACHINE
Shigeru Mitsuoka, Tokyo, Tadasaburoh Kaneko, Saitama-ken, and Tetsuo Igarashi, Funabashi, Japan, assignors to Lion Fat & Oil Co., Ltd., Tokyo, Japan
Filed July 3, 1972, Ser. No. 268,868
Claims priority, application Japan, July 2, 1971, 46/48,919, 46/48,920
Int. Cl. B31b *1/86*
U.S. Cl. 156—489 **4 Claims**

An adhesive tape sticking machine comprising an intermittent conveying device for an article and a device for sticking a segment of said adhesive tape on said article. The sticking device is provided with an adhesive tape holding reel and a turntable capable of intermittent rotation in concert with the intermittent movement of the article. The turntable has a tape-holding mechanism on its circumference as well as press arms disposed on both sides thereof in movable fashion. A cutter cuts the adhesive tape held to said tape-holding mechanism into pieces of prescribed length, and an actuating mechanism



works to thrust out said press arms toward both ends of the cut piece of adhesive tape held in abeyance facing the standing article so as to press and stick said piece to the article.

3,834,971
APPARATUS FOR BUTT WELDING THERMOPLASTICS SHEETS AND FILMS
David Emil Johnson, Macedon, N.Y., assignor to Mobil Oil Corporation
Filed Sept. 21, 1972, Ser. No. 291,133
Int. Cl. G03d *15/04*
U.S. Cl. 156—507 **5 Claims**

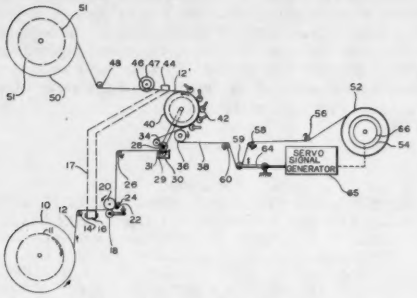


Improvements in the process and apparatus of application Ser. No. 236,766 filed Mar. 21, 1972. There is described a technique for butt welding a trailing end of one roll of thermoplastic film or sheet material to the leading edge of another roll of such material by vertically superimposing the trailing and leading portions of the two rolls, aligning the lateral edges of such portions over a significant distance sufficient to insure angular alignment of the two rolls at the butt weld. Severing the two portions along a coincident transverse line, heating the severed portions to an extent sufficient to weld such together, and bringing the heated transverse edges of the two portions together while maintaining lateral edge alignment of said portions, whereby butt welding such into a continuous sheet.

3,834,972
MEANS FOR SECURING A MAGNETIC TAPE TO MOTION PICTURE FILM
Robert Sava, Yonkers, N.Y., assignor to Thaddeus E. Owens, Brooklyn, N.Y.
Filed Feb. 16, 1973, Ser. No. 333,009
Int. Cl. B32b *31/00;* **B65c** *11/04*
U.S. Cl. 156—517 **8 Claims**

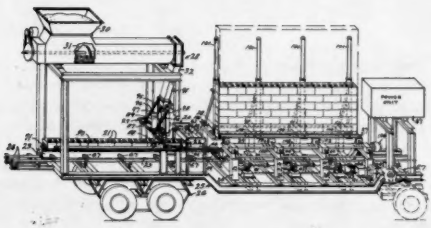
A process and apparatus for automatically and continuously applying a thin, narrow magnetic tape to a

thicker, wider plastic motion picture film comprising moving the film at a prescribed speed before a milling cutter which cuts a groove in a margin of the film and a bead of an adhesive binder is continuously applied to the



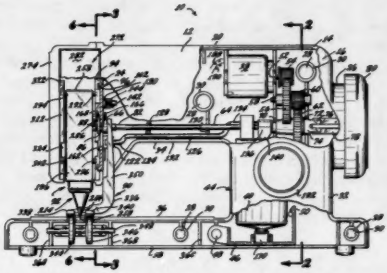
groove. A magnetic tape, under proper tension and speed, is applied continuously to the adhesive coated groove. Calendering rollers apply progressive greater pressure to the tape to secure it in place and the composite film and tape are buffed and wound on a takeup reel.

3,834,973
APPARATUS FOR FABRICATING MODULAR WALL SECTIONS
Jack A. C. Kummerow, Toledo, Ohio, assignor to S. A. Storer & Sons Company, Toledo, Ohio
Filed Jan. 2, 1973, Ser. No. 320,074
Int. Cl. B32b *31/04;* **E04g** *21/22*
U.S. Cl. 156—558 **12 Claims**



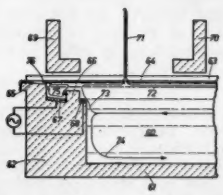
An apparatus and method for automatically fabricating modular sections of masonry type walls. The apparatus and method constitute improvements over those disclosed and claimed in Storer U.S. Pat. No. 3,585,092 of June 15, 1971. The specific apparatus has means for feeding concrete blocks in selected sequence onto a lineally movable course shuttle and for applying head and bed mortar to the blocks of the course and to the course. Clamp and pressure mechanisms set the head mortar to provide courses of uniform length, in sequence. Each course is then elevated as a unit against the underside of a previously assembled course. Means are provided to enable blocks of different wall thickness to be assembled and to assemble and set the joints of both half-bond and stack-bond wall modules and to leave voids for windows and doors where desired. The method comprises a sequence of steps by which the courses are assembled, mortar is applied, the course is made uniform in length and then is elevated into contact with the underside of a previous course, thus building the wall section from the top down.

3,834,974
SEWING MACHINE TOY
Ralph Dunn, Los Angeles, Ian F. Ayton, Palos Verdes Estates, Albert Cane, Los Angeles, Harold B. Collins, Hawthorne, J. Stephen Lewis, Pacific Palisades, Joseph P. Morris, Huntington Beach, and Wallace H. Shapero, El Toro, Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Jan. 29, 1973, Ser. No. 327,268
Int. Cl. B65c *11/04*
U.S. Cl. 156—578 **5 Claims**



Cloth seams are bonded together by soaking a solid-phase, liquid-dispersed bonding agent into the seam and then coagulating the solid-phase. Coagulation may be accelerated by an acidic coagulating agent. In one embodiment of the invention, a cartridge carries a bonding agent having a basic pH in one chamber and an acidic coagulating agent in another chamber. The cartridge is removably mounted on a cartridge reciprocating crank in a sewing machine having a base plate and a presser foot which feeds the seam across the plate under the reciprocating cartridge. The presser foot is carried by a crank and a special pivot arrangement which causes the feeding-end of the foot to move in a cloth-feeding path. In a second embodiment, a hand-held instrument reciprocates a pair of cartridges into engagement with the cloth.

3,834,975
CONTROL OF CURRENTS IN GLASS DRAWING KILN
Edgar Brichard, Jumet, Belgium, assignor to Glaverbel S.A., Watermael-Boitsford, Belgium
Filed Feb. 24, 1972, Ser. No. 228,963
Claims priority, application Luxembourg, Feb. 24, 1971, 62,648; Great Britain, Jan. 24, 1972, 3,278/72
Int. Cl. C03b *15/04*
U.S. Cl. 161—1 **52 Claims**



In a glass drawing kiln containing a mass of molten glass from which a glass ribbon is drawn, the uniformity of the temperature of the glass feeding the ribbon is improved by locally heating the glass in one region of the kiln adjacent, but spaced from, a kiln wall to produce a rising current of heated glass which forms a barrier

across which glass adjacent such wall is prevented from flowing and which supplies glass having an increased temperature to the ribbon.

3,834,976

METHOD OF MAKING ARTIFICIAL BRANCH ASSEMBLIES AND RESULTING ARTIFICIAL BRANCH ASSEMBLY

Alan Mottel, Yonkers, N.Y., assignor to Consolidated Novelty Co., Inc., Paterson, N.J.

Filed Sept. 7, 1973, Ser. No. 395,140
Int. Cl. A47g *33/06*
U.S. Cl. 161—22 **8 Claims**

A method of making artificial branch assemblies utilizes two elongated stiff wires, each of which is in a plastic sheath. First, one of the ensheathed wires is placed into a horizontal mode in a jig. A number of branches are spaced along the sheathed wire in the jig, each branch being centered on and at right angles to the sheathed wire. The second sheathed wire is placed over the branches so that the branches are sandwiched between them. Then, a number of temporary clamps hold the sheathed wires to one another so that the branches remain in place. Finally the wires are twisted along their long axes to form an artificial branch assembly.

3,834,977

SHOCK-PROOF NYLON CARPET SYSTEM

Ronald Edward Rothwell, Colonial Heights, Va., Cipriano Cipriani, Morristown, N.J., and Julian Lee Rush, Richmond, Va., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed Mar. 29, 1972, Ser. No. 239,378
Int. Cl. D03d *27/00*
U.S. Cl. 161—67 **8 Claims**

A shock-proof carpet system having a face yarn of textured nylon containing up to about twelve weight percent of an internal additive selected from ethylene oxide condensation products, a primary backing of jute or spunbonded synthetic material, a tuft-locking latex made electrically conductive by the additive of up to about ten weight percent of an antistatic material, and a standard secondary backing.

3,834,978

NON-WOVEN PRODUCT

Stanley M. Nisenson and David L. Green, Brooklyn, N.Y., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Continuation of abandoned application Ser. No. 881,268, Dec. 1, 1969. This application June 12, 1972, Ser. No. 261,770
Int. Cl. B32b *5/06*
U.S. Cl. 161—81 **2 Claims**

A non-woven nylon article, particularly useful as a carpet backing for either tufted and/or needle-punched carpets, in its preferred form comprising a non-woven nylon mat and an open filament yarn base bonded by a combination of needle-punching and selective heat treatment, and a binder, as described hereinafter.

3,834,979

LAMINAR REINFORCEMENT ELEMENT AND METHOD FOR REINFORCING TEXTILE GARMENTS

Gary L. Rossell, Philadelphia, Paul C. Fleischer, Jr., Lafayette Hill, and Maurice I. Seifer, Levittown, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

No Drawing. Continuation-in-part of application Ser. No. 805,359, Mar. 7, 1969, now Patent No. 3,722,000. This application Mar. 3, 1970, Ser. No. 16,242
Int. Cl. B32b *7/10, 27/30*
U.S. Cl. 161—146 **1 Claim**

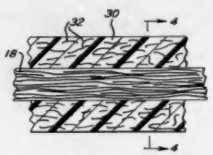
The present invention is concerned with the provision of a laminar material or element comprising a thermoplastic film and a layer of a thin fibrous tissue. This element is employed for the reinforcement of garments in areas subject to severe wear such as the seat of the pants or the knee areas of slacks and the elbow areas of shirts and blouses. For such reinforcement the laminar article or element is placed on the area of the garment to be reinforced with the paper layer exposed and the element then pressed such as by a heated iron or the type of press that is used in laundries and drycleaning establishments while being subjected to heat to cause the thermoplastic film to adhere to the surface of the garment without excessive penetration of the interstices of the yarns of the garment by the mass of the film.

3,834,980

GLASS-FILLED THERMOPLASTIC PELLETS SUITABLE FOR BLENDING WITH THERMOPLASTIC

Norman T. Hall, Santa Ana, Calif., assignor to Liquid Nitrogen Processing Corporation, Malvern, Pa.

Application Mar. 27, 1970, Ser. No. 23,213, now Patent No. 3,702,356, which is a continuation-in-part of application Ser. No. 833,983, June 17, 1969, now Patent No. 3,608,033. Divided and this application July 19, 1972, Ser. No. 273,068
The portion of the term of the patent subsequent to Jan. 9, 1990, has been disclaimed
Int. Cl. B32b *5/02*
U.S. Cl. 161—176 **1 Claim**



The process consists of feeding an extruded mixture of silane coupling agent, and molten thermoplastic (with or without glass fibers) to a cross-head die, coating continuous glass roving with said mixture in said cross-head die, solidifying said molten thermoplastic while said thermoplastic is coated on said roving, and pelletizing the solidified material. Such pellets may be blended with thermoplastic, and thereafter molded to yield an article having high tensile strength.

3,834,981

CERAMIC AND GLASS-CERAMIC ARTICLES PRODUCED FROM BETA-SPODUMENE

David G. Grossman, Painted Post, and Hermann L. Rittler, Horseheads, N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Oct. 27, 1972, Ser. No. 301,361
Int. Cl. B32b *17/06;* **C03c** *15/00*
U.S. Cl. 161—192 **9 Claims**

Low-expansion ceramic and glass-ceramic articles manufactured from beta-spodumene Li_2O_3—Al_2O_3—SiO_2 compositions using a $H^+ \rightleftarrows Li^+$ ion-exchange process which produces a hydroxy-aluminosilicate phase convertible by appropriate heat treatment to desirable aluminosilicate phases are described. The low-expansion ceramic and glass-ceramic articles are useful for certain high-temperature applications where the reactivity of lithium aluminosilicates precludes their use.

3,834,982

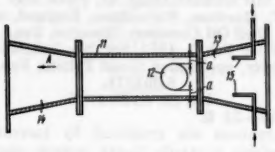
METHOD AND APPARATUS UTILIZING THE EFFECTS OF CAVITATION IN THE TREATMENT OF FIBROUS SUSPENSIONS

Rem Alexandrovich Solonitsyn, ulitsa Andreya Malyshko 45, kv. 31, Kiev, U.S.S.R.; Ivan Elizarovich Vjukov, Grazhdansky prospekt 98, korpus 2, kv. 129; Leonid Alexeevich Gorbachev, ulitsa 3, Internatsionala 3, kv. 141; and Anatoly Mikhailovich Belonogov, ulitsa Bela Kuna 23, kv. 171, all of Leningrad, U.S.S.R.; and Gennady Afanasievich Vorobiev, Chuksin tupik 4, kv. 10; and Alexandr Vasilievich Efimov, ulitsa Starogo Gaya 6, korpus 1, kv. 58, both of Moscow, U.S.S.R.

Filed Sept. 1, 1972, Ser. No. 285,860

Int. Cl. D21b *1/00*

U.S. Cl. 162—1 19 Claims



Suspensions of fibrous materials are treated by positioning a non-streamlined solid cylindrical body, crosswise in a reactor such that the cylinder is disposed in a hydrodynamic flow of the suspension to produce a two dimensional plane contraction of the flow. This causes cavitation forces to be established in the thus contracted flow and these forces act on the suspension to effect any one or more of various treatments such as resination, beating, bleaching, washing, etc.

3,834,983

PROCESS OF FORMING WET LAID TUFTED NONWOVEN FIBROUS WEB FROM A VISCOUS FIBROUS DISPERSION AND PRODUCT

Bernard W. Conway, Holyoke, Mass., and James Moran, Simsbury, Conn., assignors to C. H. Dexter & Sons, Inc., Windsor Locks, Conn.

Filed Mar. 15, 1973, Ser. No. 341,699

Int. Cl. D21h *3/12, 3/40*

U.S. Cl. 162—168 9 Claims

A tufted nonwoven waterlaid web material exhibiting high loft, bulk and absorbency is comprised of a substantially planar web body portion of randomly arranged water dispersible fibers and a multitude of separate, spaced fiber tufts of high concentration arrayed on at least one surface. The tufts are composed of a plurality of closely associated, substantially aligned fibers anchored within but extending from the web body portion in the form of weft-like fiber bundles. The nonwoven web material is produced by a wet papermaking process that includes the steps of providing an aqueous fiber dispersing medium having a controlled fluid viscosity of about 3 centipoises and more dispersing within the viscous medium select fibers having a denier of at least 1 d.p.f. at a fiber concentration of at least about .02 percent by weight and depositing the fibers within said dispersion on an apertured fiber collecting element wherein the average hole area of the apertures is about 3×10^{-4} sq. in. and more to form the tufted nonwoven fibrous web with the tufts formed by bundles of substantially aligned fibers extending through the apertures.

3,834,984

METHOD OF INCORPORATING WATER SOLUBLE EPOXYPROPYL STARCH INTO PAPER

Robert E. Wing, Peoria, and William M. Doane, Morton, Ill., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Original application Dec. 21, 1971, Ser. No. 210,549, now Patent No. 3,795,671. Divided and this application Aug. 9, 1973, Ser. No. 386,921

Int. Cl. D21l *3/28*

U.S. Cl. 162—175 2 Claims

A process is disclosed for preparing paper having incorporated therein an epoxypropyl starch. At epoxypropyl D.S. of up to .09 the compounds are water soluble and increase both wet and dry strength of paper at a 1-percent level of addition.

3,834,985

SPEED REGULATING DEVICE INCLUDING PLANETARY GEARING AND A HYDRAULIC UNIT OR VARIABLE VOLUME

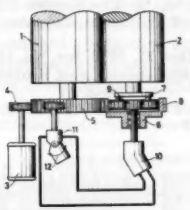
Lars Gullberg, Vasa, Finland, assignor to Oy Wartsila Ab, Helsinki, Finland

Filed Nov. 28, 1972, Ser. No. 310,078

Claims priority, application Finland, Nov. 30, 1971, 3,412/71

Int. Cl. D21g *9/00;* F16h *47/04*

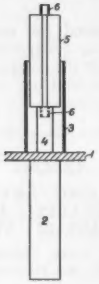
U.S. Cl. 162—280 6 Claims



A device for use in regulating the difference in speeds between two rotating elements, for instance a pair of rolls forming a crepe nip in a papermaking machine, includes a planetary gearing connected to one of the rotating elements so that a member carrying the planet wheels of the gearing rotates at a speed which has a constant ratio with respect to the rotating speed of the rotating element. In the planetary gearing there is a toothed annulus engaging and surrounding the planet wheels, and this annulus is arranged to rotate at a constant speed ratio with respect to the other one of the rotating elements. A hydraulic pump and motor arrangement is connected to the device so that the flow produced by the pump is dependent on the rotating speed of the last mentioned rotating element, and so that the motor determines the speed of the sun wheel of the planetary gearing. The rotating speed of the sun wheel can be regulated by changing the piston displacement volume in either the pump or the motor, or in both of them. Changes in the speed of the sun wheel cause corresponding changes in the speed of the rotating element connected to the planet wheel carrier.

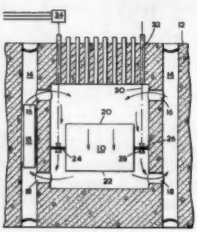
3,834,986
CONTROL ROD FOR NUCLEAR REACTORS
Antti Suvanto, Vasteras, Sweden, assignor to Aktiebolaget Asea-Atom, Vasteras, Sweden
Filed Aug. 24, 1972, Ser. No. 283,487
Claims priority, application Sweden, Oct. 11, 1971, 12,820/71
Int. Cl. G21c *19/10*
U.S. Cl. 176—33 1 Claim

In order to provide more efficient use of control rods for nuclear reactors, they are provided with attachment means at both ends for attachment to a movable holder such as a movable shaft. Thus the rods may be reversed



when one end is spent, while the other end still has useful life.

3,834,987
FLUID-COOLED NUCLEAR REACTOR
Reginald Kenneth Cook, % British Nuclear Design & Construction Limited, Cambridge Road, and Piotr Stanislaw Burylo, % The English Electric Company Limited, both of Whetstone, Leicester LE8 3LH, England
Filed Dec. 21, 1970, Ser. No. 100,055
Claims priority, application Great Britain, Dec. 23, 1969, 62,548/69
Int. Cl. G21c *7/32, 15/02*
U.S. Cl. 176—59 5 Claims



To achieve a rapid reduction in heat output from a fluid-cooled nuclear reactor which has associated therewith a direct-cycle gas turbine, provision is made for permitting a proportion of the cool coolant fluid fed to the upstream side of the reactor core to by-pass the core and mix with, and thus reduce the temperature of, heated coolant emergent from the downstream side of the core. The invention improve the accessibility of fluid control equipment and, where the gas turbine is disposed in a pod defined in the wall thickness of the reactor pressure vessel, avoids interference with the pressure vessel stressing system.

3,834,988
METHOD OF MAKING GLUCOSE ISOMERASE AND USING SAME TO CONVERT GLUCOSE TO FRUCTOSE
Kenneth K. Shieh, St. Louis County, Howard A. Lee, Rock Hill, and Brendan J. Donnelly, St. Louis County, Mo., assignors to Anheuser-Busch, Incorporated, St. Louis, Mo.
No Drawing. Filed Oct. 10, 1972, Ser. No. 296,000
Int. Cl. C07g *7/02*
U.S. Cl. 195—66 R 24 Claims

This disclosure relates to the use of microorganisms of the genus *Actinoplanes,* and particularly to the species *Actinoplanes missouriensis,* to produce glucose isomerase in large quantity even in the absence of xylose in the growth medium. The preferred growth medium is neutralized corn steep liquor which has had the sludge removed.

3,834,989
MICROBIOLOGICAL PROCESS
David E. F. Harrison, Faversham, England, assignor to Shell Oil Company, Houston, Tex.
Filed Feb. 3, 1972, Ser. No. 223,348
Claims priority, application Great Britain, Feb. 19, 1971, 5,003/71
Int. Cl. C12b *1/00*
U.S. Cl. 195—28 R 5 Claims

Micro-organisms are produced by inoculating with micro-organisms a sterile liquid growth medium containing assimilable sources of nitrogen and essential mineral salts, allowing the micro-organisms to grow, and then adding fresh sterile growth medium containing a sterilizing concentration of a microbiocide which, at the lower concentrations produced by admixture of the fresh medium with the inoculated medium, is metabolizable by the micro-organisms.

3,834,990
ISOLATION OF ENZYMES AND ENZYME INHIBITORS
Eugen Werle and Hans Fritz, Munich, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
Continuation of abandoned application Ser. No. 840,808, July 10, 1969. This application Feb. 24, 1972, Ser. No. 229,198
Claims priority, application Germany, July 15, 1968, P 17 68 934.8
Int. Cl. C07g *7/02*
U.S. Cl. 195—68 7 Claims

A process is provided for the enrichment of polypeptides such as enzymes or enzyme inhibitors by linking a polypeptide in a covalent linkage to a carrier to form an addition product of resinous nature into which addition product basic groups are introduced to render the product electrostatically nearly neutral. The resulting addition product in water is contacted with a solution of the substance to be enriched and capable of complexing with the fixed polypeptide and the complex is then washed, caused to dissociate and the complex-forming substance isolated.

3,834,991
COLORIMETRIC ASSAY FOR LYSOZYME
Robert E. Megraw, St. Louis, Mo., and Judith C. Woodson, Randolph, N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.
No Drawing. Filed May 23, 1972, Ser. No. 256,073
Int. Cl. C12k *1/04*
U.S. Cl. 195—103.5 R 13 Claims

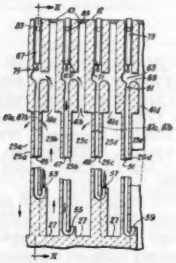
A suspension of dyed *Micrococcus lysodeikticus* cells is used as the substrate in a novel, colorimetric assay for lysozyme in body fluids. To obtain the substrate, dried *Micrococcus lysodeikticus* cells are treated with a reactive dye, and all unreacted dye is removed upon repeated

washing with water. A buffered, aqueous suspension of the dyed cells is incubated with a fluid test sample containing an unknown quantity of lysozyme. Cell lysis yields a solution of dyed fragments of *Micrococcus lysodeikticus* cells, the absorbance of which provides a measure of lysozyme concentration in the test sample.

3,834,992
CULTURE KIT
Ernest Bohnke, 15111 SE. Caruthers, Portland, Oreg. 97233, and Henning B. Jorgensen, Rte. 3, Box 186, Sherwood, Oreg. 97140
Filed Aug. 21, 1972, Ser. No. 282,280
Int. Cl. C12b *1/00*
U.S. Cl. 195—139 **3 Claims**

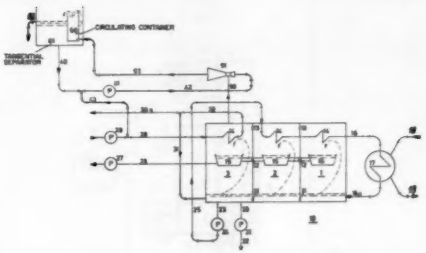
A culture kit including a vial externally threaded at its top end and thereat provided with an annular valve seat for a valve disc mold-united with the top end of a stem whose bottom end is similarly united with the top end of a holder for a culture medium, such as agar, or the like. The holder is in the form of a cup-like member provided at its bottom end with means for centering engagement with the inner bottom wall of the vial. An internally threaded closure cap for the vial is provided for advancement on the threads of the vial to seal the interior thereof and the culture contents of the spoon.

3,834,993
COMBUSTION SYSTEM FOR COKE OVEN
Joseph Van Ackeren, Upper St. Clair, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.
Filed Sept. 5, 1972, Ser. No. 286,129
Int. Cl. C10b *1/06, 5/02*
U.S. Cl. 202—139 **5 Claims**



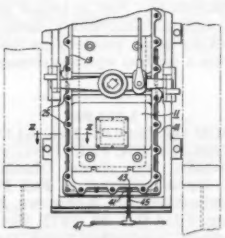
A pair of fuel and/or air conduits, located just below the top pavement of a coke oven battery, carry fuel gas and air for decarburizing the gas riser ducts, and these gases flow downward through a conduit to a calibrated nozzle. The fuel gases flow through a venturi throat into conduits that terminate near the base of the respective flue where combustion occurs. Air is forced into the "off" gas header to provide a decarbonizing condition for burning out any carbon previously deposited in the gas riser of the companion flue during the "on" burning cycle.

3,834,994
MULTI-STAGE EVAPORATOR
Klaus Dieter Peter, Varrel, Germany, assignor to Fried. Krupp Gesellschaft mit beschrankter Haftung, Essen, Germany
Filed Nov. 1, 1971, Ser. No. 194,148
Claims priority, application Germany, Nov. 6, 1970, P 20 54 587.3
Int. Cl. B01d *3/06;* **C02b** *1/06, 1/10*
U.S. Cl. 202—174 **1 Claim**



An evaporator with a plurality of evaporating chambers between which a pressure and temperature drop exists, which is equipped with devices for conveying a liquid through the evaporating chambers for evaporation of a part of the liquid in each chamber, with condensers of which each communicates with one of said evaporating chambers, with means for withdrawing the obtained distillate from said condensers, and with withdrawing means for withdrawing inert gases from the evaporator, said withdrawing means including a liquid jet ejector and a water pressure pump and a separating device for separating inert gas, said jet ejector and said water pressure pump and said separating device being arranged in communication with each other in a closed circuit adapted to receive cooling water and to discharge warmed-up water.

3,834,995
APPARATUS FOR APPLYING THRUST TO THE KNIFE EDGE OF A COKE OVEN DOOR
Joseph Van Ackeren, Pittsburgh, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.
Filed Mar. 9, 1973, Ser. No. 339,598
Int. Cl. C10b *25/06, 25/16*
U.S. Cl. 202—248 **4 Claims**



Fluid pressure, such as air, is applied to a plurality of pistons having rods that coact with and urge a flexible knife edge into ultimate sealing contact with the door

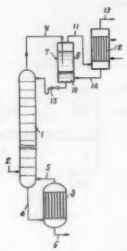
jamb of a coke oven chamber. Each door is provided with a fluid header connected to cylinders in which the pistons operate, and the fluid header of each door connects to a main header extending along the coke oven battery.

3,834,996

INHIBITING POLYMERIZATION OF OXYGEN CONTAINING TETRAFLUOROETHYLENE

Hiroshi Aiso, Kawanishi, and Tatsuya Hirose and Kazuhisa Kato, Setsu, Japan, assignors to Daikin Kogyo Kabushiki Kaisha, Osaka-shi, Japan

Filed Nov. 22, 1971, Ser. No. 200,856
Claims priority, application Japan, Nov. 26, 1970, 45/104,642
Int. Cl. F25j *3/00*
U.S. Cl. 203—9 **4 Claims**



A method for rectifying oxygen-containing tetrafluoroethylene is characterized by contacting effluent tetrafluoroethylene vapor from a rectification tower with a liquid terpene in a condensing line to produce condensed tetrafluoroethylene saturated with terpene and refluxing the condensed tetrafluoroethylene saturated with terpene; and an apparatus for rectifying oxygen-containing tetrafluoroethylene comprises a rectification tower, a condensing line for contacting effluent tetrafluoroethylene vapor from the rectification tower with liquid terpene to produce condensed tetrafluoroethylene saturated with terpene and a line for refluxing the condensed tetrafluoroethylene saturated with terpene to the top of the rectification tower.

3,834,997

METHOD FOR THE SEPARATION OF ORTHO- AND PARA-DIHYDROXY BENZENE ISOMERS

Martin B. Hocking, Victoria, British Columbia, and Donald J. Intihar, Sarnia, Ontario, Canada, assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed July 14, 1972, Ser. No. 271,822
Int. Cl. C10g *1/24*
U.S. Cl. 203—87 **6 Claims**

A sublimation technique is utilized through the application of a vacuum and heat to obtain yields of the separate ortho- and para-dihydroxy isomers higher than those obtained by other recovery methods while at the same time being a method which is environmentally more attractive.

3,834,998

METHOD OF PRODUCING ALUMINUM PLANOGRAPHIC PRINTING PLATES

Masaru Watanabe and Azusa Ohashi, Odawara-shi, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara-shi, Kanagawa, Japan

No Drawing. Filed Oct. 18, 1972, Ser. No. 298,751
Claims priority, application Japan, Oct. 21, 1971, 46/83,482
Int. Cl. C23b *9/02*
U.S. Cl. 204—33 **16 Claims**

A process of producing aluminum containing supports, which comprises etching a grained aluminum surface with a basic or acidic etching solution within the range of 0.5 to 30 g./m.^{2} and then subjecting the etched surface to anodic oxidation.

3,834,999

ELECTROLYTIC PRODUCTION OF GLASSY LAYERS ON METALS

Rudolf J. Hradcovsky and Otto R. Kozak, Long Beach, N.Y., assignors to Atlas Technology Corporation, Long Beach, N.Y.

No Drawing. Filed Apr. 15, 1971, Ser. No. 134,431
Int. Cl. C23b *4/02, 11/02*
U.S. Cl. 204—56 R **23 Claims**

Metals and alloys are coated with glassy, adherent, corrosion-resistant, protective layers by electrolytic anodization at high voltage in suitable baths. The metals and alloys which can be coated include those which exhibit electrolytic rectification at both low and high voltages and those which exhibit rectification at high voltages only. The anodization baths contain anions such as tungstate, phosphate, arsenate, stannate, stibnate, molybdate, borate, chromate and dichromate, alone or in combination and carbonate, in combination only. Selection of the operating conditions makes it possible to produce coatings which are smooth or which have extended surfaces. The process involves coagulation of colloids at the surface of the metals. Either direct or alternating current may be used.

3,835,000

ELECTROLYTIC PROCESS FOR PRODUCING N-PHOSPHONOMETHYL GLYCINE

Harry W. Frazier, Creve Coeur, Lowell R. Smith, Chesterfield, and John H. Wagenknecht, Kirkwood, Mo., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Continuation-in-part of application Ser. No. 317,498, Dec. 21, 1972. This application Aug. 6, 1973, Ser. No. 385,932
Int. Cl. C07b *3/00*
U.S. Cl. 204—78 **19 Claims**

This disclosure relates to an electrolytic process for producing N-phosphonomethyl glycine compounds by the electrolysis of N-organo-N-phosphonomethylamino acetic acid compounds. In accordance with this disclosure, a solution of an N-organo-N-phosphonomethylamino acetic acid compound is subjected to an electromotive force or electric current in an electrolytic cell to be electrolytically oxidized to an N-phosphonomethyl glycine. The N-phosphonomethyl glycines produced are useful as post-emergent herbicides.

3,835,001

ION EXCHANGE REMOVAL OF DICHROMATES FROM ELECTROLYTICALLY PRODUCED ALKALI METAL CHLORATE-CHLORIDE SOLUTIONS

Thomas Francis O'Brien, Swarthmore, Pa., assignor to Penn-Olin Chemical Company, Wilmington, Del.

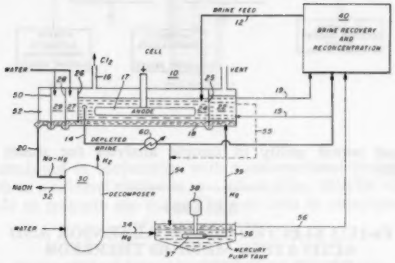
Filed Apr. 30, 1973, Ser. No. 355,370
Int. Cl. C01b *11/26*
U.S. Cl. 204—95 **6 Claims**

In an electrolytic process in which alkali metal chlorate is produced from alkali metal chloride solution, dichromates (utilized for cathodic protection during electrolysis) are removed from an effluent stream of chlorate-enriched solution by passing the stream through an ion exchange resin to effect an improvement in process efficiency. When the ion exchange resin becomes exhausted the bed is regenerated with high pH sodium chloride brine. The ion exchange system is especially adapted to remove dichromates from the recycle stream of the evaporatively concentrated alkali metal chlorate solution whereby the recycle stream can be combined with the electrolytic process effluent for evaporative concentration.

3,835,002
BRINE ELECTROLYSIS EMPLOYING MERCURY CATHODE

Fred S. Williams and William G. Stock, Port Lavaca, Tex., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed June 13, 1973, Ser. No. 369,561
Int. Cl. C07d 1/08
U.S. Cl. 204—99 6 Claims



The use of a concentrated brine of a defined concentration level as the cover for certain mercury portions in operating an electrolytic cell for the decomposition of brine where the mercury serves as the cathode, substantially reduces mercury vapor pollution. The depleted brine exiting the cell serves as the concentrated brine.

ERRATUM

For Class 204—159 see:
Patent No. 3,835,085

3,835,003
PHOTOPOLYMERIZATION OF OXETANES

Sheldon I. Schlesinger, Hightstown, N.J., assignor to American Can Company, Greenwich, Conn.

No Drawing. Continuation-in-part of application Ser. No. 753,869, Aug. 20, 1968, now Patent No. 3,708,296, dated Jan. 2, 1973. This application Oct. 19, 1972, Ser. No. 298,848
Int. Cl. B01j 1/10; C08g 1/00
U.S. Cl. 204—159.11 14 Claims

Polymerization of polymerizable compositions comprising monomers which may be oxetanes or mixtures thereof with monomeric or prepolymeric epoxides is effected by mixing such compositions with radiation-sensitive aromatic diazonium salts which decompose upon application of energy such as electromagnetic radiation to release Lewis Acid to initiate polymerization of said monomers.

3,835,004
ACCELERATION OF CROSSLINKING IN BY POLYOLEFINS APPLIED RADIATION IN A GASEOUS ATMOSPHERE OF FLUORINE-CONTAINING MONOMER AND ACETYLENE

Tsutomu Kagiya, Kyoto, and Hiroshi Mitsui and Fumio Hosoi, Takasaki, Japan, assignors to Japan Atomic Energy Research Institute, Tokyo, Japan

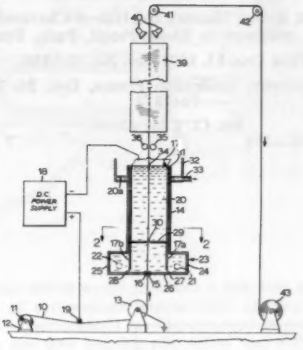
No Drawing. Filed July 17, 1972, Ser. No. 272,151
Claims priority, application Japan, Feb. 5, 1971, 46/9,595; July 19, 1971, 46/53,731; Aug. 19, 1971, 46/63,203; Sept. 9, 1971, 46/69,839
Int. Cl. B01j 1/10, 1/12
U.S. Cl. 204—159.17 18 Claims

An olefine polymer is advantageously cross-linked by means of an ionizing radiation in the presence of an ethylenically unsaturated halocarbon and a monomer selected from acetylene and 1,3-butadiene. Thus, an olefine polymer is provided with improved mechanical, chemical, thermal properties and the like.

3,835,005
ELECTROCOATING PROCESS AND APPARATUS

Michael Alan Dudley, Beaconsfield, Quebec, and Pierre Leon Claessens, Sainte Eustache, Quebec, Canada, assignors to Canada Wire and Cable Limited, Toronto, Ontario, Canada

Filed Oct. 27, 1972, Ser. No. 301,617
Int. Cl. B01k 5/02; C23b 13/00
U.S. Cl. 204—181 23 Claims

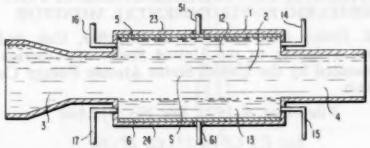


A continuous electrocoating process for electrocoating substrates such as wire or strip in which substrate is coated in a cell through which bath liquid is continuously circulated includes the steps of contacting the substrate entering the cell with freshly introduced bath liquid at relatively high velocity, coating the substrate in the bath, and causing flow of coating liquid at the bath surface radially outwardly of the emerging substrate to remove accumulated gas bubbles from the coating, then wiping the wet coated substrate to remove excess clinging bath material, and then curing and coating.

3,835,006
METHOD OF REMOVING IONIC SUBSTANCES FROM A PULP

Hideo Fujita, Masami Ishitobi, and Hiroyoshi Suga, Amagasaki, and Fukuo Itohara, Michiharu Matsushita, and Hiroshi Yamamoto, Shizuoka, Japan, assignors to Dainichi-Nippon Cables, Ltd., Amagasaki-shi, Hyogo, and Tomoegawa Paper Manufacturing Co., Ltd., Tokyo, Japan

Filed July 10, 1972, Ser. No. 270,406
Claims priority, application Japan, July 10, 1971, 46/51,323; Apr. 19, 1972, 42/39,370
Int. Cl. B01d 13/02; B01k 5/00
U.S. Cl. 204—180 R 27 Claims



A method of removing ionic substances from a pulp which is particularly useful in preparing an electrically

insulating paper, which comprises continuously passing a pulp slurry comprising a dispersion of pulp in a liquid medium at a concentration of 0.05% to 6.0% by weight between oppositely charged facing electrodes to which an electric potential is applied to remove ionic substances remaining in the pulp, the pulp slurry having an electric conductivity of at least

10 μ℧./cm.

during passing between the electrodes.

3,835,007

PROCESS FOR BONDING COPPER OR IRON TO TITANIUM OR TANTALUM

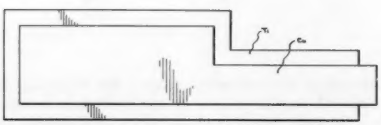
Alain Ferat, Robert Masotti, and Hubert Chavanel, Lyon, France, assignors to Rhone-Progil, Paris, France

Filed Dec. 13, 1972, Ser. No. 314,858

Claims priority, application France, Dec. 24, 1971, 7147874

Int. Cl. C23c *15/00*

U.S. Cl. 204—192 **7 Claims**



Copper or iron are securely bonded to titanium or tantalum substrate metal by initially subjecting the substrate metal to ionic bombardment in which the substrate metal performs the role of a cathode and then to cathode sputtering in which the substrate metal performs the role of an anode, and the copper or iron the role of a cathode. Thereafter, the bonded copper or iron is supplemented by additional deposits by conventional means such as electrodeposition, etc. Superior industrial products resulting from the process are useful as anodes in electrolysis cells and as heat exchangers.

3,835,008

AUTOMATIC CONTROLLED-CURRENT COULOMETRIC ENVIRONMENTAL MONITOR

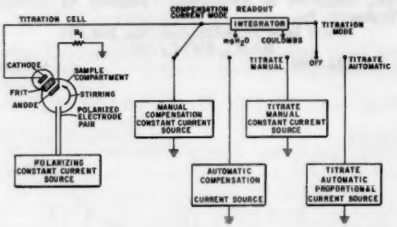
Dale J. Fisher and Theodore R. Mueller, Oak Ridge, Tenn., assignors to the United States of America as represented by the United States Atomic Energy Commission

Filed Dec. 6, 1972, Ser. No. 312,540

Int. Cl. G01n *27/42, 27/44*

U.S. Cl. 204—195 T **2 Claims**

An automatic, controlled-current coulometric titrator having several unique features, i.e., (1) an automatic titration mode, and (2) an automatic compensation current mode, enables, the standardization and calibration of methods of analysis used in pollution control and has



found recent utility in sample analyses for traces of water.

3,835,009

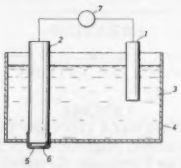
Fe-1173 ELECTRO-CHEMICAL SENSOR AND ACTIVATING METHOD THEREFOR

Gabriel G. Barna, Richardson, and Raymond J. Jasinski, Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed July 30, 1973, Ser. No. 383,941

Int. Cl. G01n *27/36, 27/46*

U.S. Cl. 204—195 G **8 Claims**



The disclosure relates to electro-chemical sensors for sensing gaseous nitrogen dioxide in the presence of carbon monoxide, oxygen, nitrogen, sulfur dioxide, nitric oxide and methane and in chemically compatible mixtures of these gases as well as capable of sensing gaseous materials which are more strongly oxidizing than NO_2, the sensor being formed from an activated non-porous Fe-1173 glass. Air oxidizing the Fe-1173 glass for 3 minutes at 300° C. activates the glass for improved sensing of gaseous nitrogen dioxide.

3,835,010

ION-SENSITIVE ELECTRODE BASED ON NEUTRAL CARRIER COMPLEX

Robert J. Levins, Richmond, Va., assignor to Philip Morris Corporation, New York, N.Y.

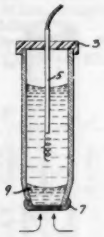
Continuation-in-part of abandoned application Ser. No. 179,941, Sept. 13, 1971. This application June 21, 1972, Ser. No. 264,769

Int. Cl. G01n *27/46*

U.S. Cl. 204—195 L **8 Claims**

An electrode is provided which is remarkably sensitive to and is selective toward barium ions and strontium ions present in a test solution containing other common cations such as, for example, Ca^{++}, Mg^{++}, Na^{+}, H^{+} and Li^{+}. This electrode comprises a region containing an ion-

exchange material which is a neutral carrier complex that is extremely selective toward these cations. This electrode



is employed in conjunction with a conventional electrode such as a calomel electrode or a silver-silver chloride electrode to measure the activity of said ions in solutions.

3,835,011

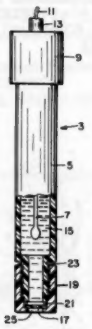
POTASSIUM ION SENSITIVE ELECTRODE

George Baum, Corning, and Merill Lynn, Big Flats, N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed June 23, 1972, Ser. No. 265,771

Int. Cl. G01n *27/30, 27/46*

U.S. Cl. 204—195 M **10 Claims**



Electrode for measuring the concentration of potassium ions in aqueous solution wherein the sensing portion is a polyvinyl chloride membrane containing a potassium tetraphenylborate dissolved in an organic solvent which also plasticizes the PVC. A preferred electrode measures the concentration of potassium ions in the presence of varying amounts of sodium ions. Methods of preparing and using the electrodes are disclosed.

3,835,012

PROTECTIVE SHIELD FOR OXYGEN SENSOR

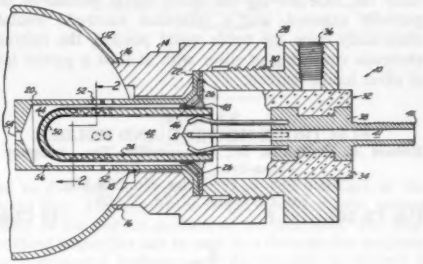
Thomas J. Hemak, Madison Heights, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Aug. 28, 1972, Ser. No. 284,386

Int. Cl. G01n *27/46*

U.S. Cl. 204—195 S **1 Claim**

A heat distributive protective shield for a zirconium dioxide oxygen sensor, particularly for internal combustion engine exhaust systems, is illustrated. The shield is arranged in surrounding relationship with respect to the zirconium dioxide sensor body and is provided with a plurality of spaced perforations which are arranged to distribute the exhaust gas heating to the sensor body to provide uniform thermal stressing of the zirconium dioxide material. To this end, the distribution of the perforations provides a greater number of perforations in proximity to



any bodies which would constitute a heat sink and a lower number of perforations remote from any heat sink material. The perforations may be arranged to provide for a swirling gas flow between the shield and the zirconium dioxide sensor body in order to prevent particulates from impinging upon the sensor surface.

3,835,013

OXYGEN SENSOR AND ELECTRODE DEVICE THEREFOR

Willard T. Grubb and Lawrence H. King, Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Feb. 1, 1973, Ser. No. 328,755

Int. Cl. G01n *27/46*

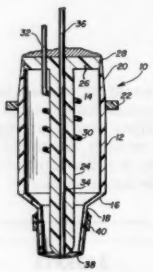
U.S. Cl. 204—195 P **7 Claims**

An oxygen sensor is described which has an electrode device with a first electrode and a reference electrode, and

an aqueous buffered solution of an electrolyte containing a halide salt which contacts the noble metal portion of the first electrode and the silver halide layer of the reference electrode of the electrode device.

The electrode device has a chemically-biased oxygen-sensing electrode with a closed-end tube, the tube having a portion of a noble metal selected from the class consisting of palladium and palladium alloys, a reservoir for hydrogen connected to the opposite end of the tube, and a hydrogen gas source contained within at least the reservoir; a layer of electrical insulation covering at least partially the tube leaving the noble metal portion at least partially exposed, and a reference electrode insulated electrically from the noble metal portion, the reference electrode consisting of silver with at least a partial layer of silver halide thereon.

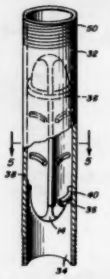
3,835,014
ELECTRODE HOUSING AND HOLDER
Robert A. Huffhines, Jr., Duncanville, Tex., assignor to Tex-a-dyne, Dallas, Tex.
Filed Feb. 5, 1973, Ser. No. 329,373
Int. Cl. G01n *27/28, 27/30*
U.S. Cl. 204—195 P **10 Claims**



The anode and cathode of an electrode are supported in a housing having a main body contiguous with a tapered section. The tapered section is contiguous with the main body at a shoulder and tapers from the inner diameter of the shoulder to a second smaller diameter at an open end. Opposite from the tapered section, the main body includes a tapered neck section with a mounting ring at the end of the taper on the main body. At the open end of the tapered section a membrane encloses the housing chamber, this membrane extends over the tapered section and is held in place by a membrane sleeve having an internal taper for mating with the external taper of the tapered section. The membrane sleeve includes a chamfered end for folding the membrane material against the tapered section of the housing. A chemical weld between the membrane sleeve and the tapered section holds the assembly in place. A holder for the electrode housing includes a chamber having a tapered section for mating with the tapered neck section of the housing and has a coupling for engaging a shroud for protecting the electrode. The shroud includes a shoulder in an internal chamber for engaging the mounting ring of the housing.

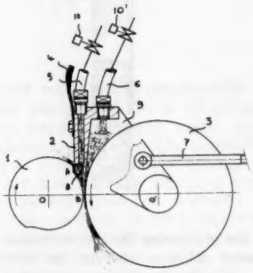
3,835,015
SYSTEM STABILIZER
Wildon A. Gary, 305 NW. 7th Ave., Mineral Wells, Tex. 76067
Filed Nov. 15, 1972, Ser. No. 305,091
Int. Cl. C23f *13/00*
U.S. Cl. 204—197 **26 Claims**

A fluid stabilizer rod consists of an alloy of copper, zinc, nickel and tin adapted to be installed in a fluid conduit and to have a fluid flowing thereover. The rod is generally elongated and triangular in cross-section with



each side thereof defining a lengthwise extending concave arcuate surface.

3,835,016
ELECTROCHEMICAL GRINDING METHODS AND APPARATUS
Henri M. Bourdolle, Serge R. Lacroix, Jean E. Fleury, Gilbert Peuillot, and Jean Pinot, Billancourt, France, assignors to Regie Nationale des Usines Renault, Billancourt, and Automobiles Peugeot, Paris, France
Filed July 5, 1972, Ser. No. 269,076
Claims priority, application France, July 26, 1971, 7127282
Int. Cl. B23p *1/02, 1/10, 1/12*
U.S. Cl. 204—224 M **5 Claims**

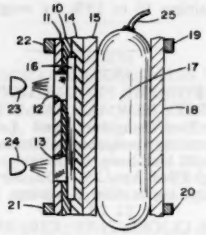


A device for electrochemical grinding by removing material from the surface of a conducting workpiece, comprising a conformator tool including two separate members, a first member for a quick attack of a rough shaped workpiece, comprising a support, one front-end of which is shaped as the compliment of the sectional contour to be obtained along the outer periphery of the workpiece, which operates during a first step of the operation; a high electrolyte flow output supply; a high-density current electricity source; and the second member is an electrolytic grinder operating at the rear part of the support, for grinding the workpiece to the desired final shape, the rear part of the support constituting a damming bulk for the electrolyte.

3,835,017
REUSABLE SHIELDS FOR SELECTIVE ELECTRODEPOSITION

Pat F. Mentone, St. Paul, Thomas I. Myers, West St. Paul, Gary D. Jensen, St. Paul, and Robert E. Miettunen, Minneapolis, Minn., assignors to Buckbee-Mears Company, St. Paul, Minn.

Filed Dec. 22, 1972, Ser. No. 317,372
Int. Cl. C23b *5/48*; B23p *1/02*
U.S. Cl. 204—224 R **6 Claims**

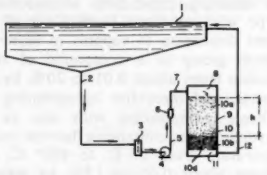


A device for selectively shielding portions of lead frames so that a metal can be selectively electro-deposited in predetermined regions of lead frames or the like.

3,835,018
APPARATUS FOR THE TREATMENT BY METALLIC IONS OF AQUEOUS LIQUIDS

Lorenzo Puig Casanovas and Jean Leon Justin Vellas, Toulouse, France, assignors to Societe d'Etudes et de Diffusion de Procedes et Brevets S.A., Geneva, Switzerland

Original application Oct. 28, 1970, Ser. No. 84,861. Divided and this application Jan. 19, 1972, Ser. No. 219,092
Claims priority, application France, Oct. 28, 1969, 6936971
Int. Cl. B01k *3/00*
U.S. Cl. 204—228 **5 Claims**



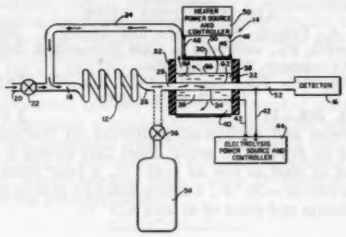
A device for liquid purification includes a vat provided with metallic electrodes and connected to a circulating pump and to a filter containing at least one filtering layer of low granulometry built up from accumulation of flocculates. The device is particularly suited for water treatment.

3,835,019
COMBINED ELECTROLYTIC HYDROGEN GAS SEPARATOR AND GENERATOR FOR GAS CHROMATOGRAPHIC SYSTEMS

James E. Lovelock, Bowerchalke, England, assignor to California Institute of Technology, Pasadena, Calif.

Original application Feb. 2, 1970, Ser. No. 7,922, now Patent No. 3,690,835. Divided and this application Apr. 12, 1972, Ser. No. 243,500
Claims priority, application Great Britain, Mar. 6, 1969, 12,003/69
Int. Cl. C22d *3/02*
U.S. Cl. 204—246 **10 Claims**

A combined hydrogen gas separator and generator device comprising a pair of this palladium film membrane electrodes separated by an aqueous hydroxide electrolyte. On application of an electrolytic current to the films heated to a temperature of at least 150° C., hydrogen is selectively transferred through the first film, across the body of electrolyte as protonic hydrogen and is regener-

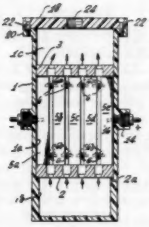


ated as diatomic hydrogen on the outside surface of the second film. The impurities in the hydrogen inlet stream collect at the outside surface of the first film. The concentrated impurities can be sent to a detector for analysis. The regenerated hydrogen can be recycled to operate a separator unit such as a gas chromatographic column.

3,835,020
ELECTRICAL TERMINATION MEANS AND ELECTRODE SPACING MEANS FOR MAINTAINING A UNIFORM ELECTRODE GAP

Frank X. Galneder, 5639 E. Pittman St., Simi Valley, Calif. 93063

Filed Feb. 9, 1973, Ser. No. 331,303
Int. Cl. B01k *3/00, 3/08*
U.S. Cl. 204—268 **12 Claims**



An electrolytic cell comprising a non-conductive chamber, housing a plurality of graphite electrodes, having been subjected to a pretreament, including submersion in a metallic chloride solution, and arranged, vertically, as a unit, between two baffle plates in said chamber, each of said electrodes constituting an oppositely located anode and cathode, said electrolytic cell being provided with automatically adjusting means, consisting of external pressure means coacting with non-conducting spacing means between individual electrode pairs, for the maintenance of a constant predetermined individual spacing between any two of said electrodes in the chamber.

3,835,021
SOLID WASTE DISPOSAL PROCESS

William K. Lorenz, Ridley Park, Pa., Edward C. Sebesta, Houston, Tex., and Charles L. McClellan, Birmingham, Ala., assignors to Sun Oil Company of Pennsylvania, Philadelphia, Pa.

No Drawing. Filed Mar. 12, 1973, Ser. No. 340,407
Int. Cl. C02c *3/00, 5/10*
U.S. Cl. 208—13 **5 Claims**

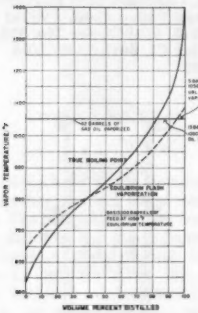
In the process of disposing refinery waste sludge materials, the improvement which comprises dewatering and

deoiling refinery sludges by filtering through a filter press at a temperature of from about 100° F. to about 200° F., washing of the filter cake with hot water, and subjecting the solid filter cake thus obtained to soil biodegradation.

3,835,022
ARCTIC DIESEL FUEL
James A. Frayer, Pittsburgh, and Harry C. Stauffer, Cheswick, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.
No Drawing. Filed Jan. 16, 1973, Ser. No. 324,147
Int. Cl. C10l *1/08*
U.S. Cl. 208—15 **3 Claims**

Kerosene and naphthenic petroleum oil fractions are blended to provide an arctic diesel fuel having a cloud point of at least as low as −45° F., a pour point of at least as low as −50° F., a cetane index of at least 40 and a distillation end point of at least 625° F.

3,835,023
GASOLINE PREPARED FROM CRACKING HYDRODESULFURIZED RESIDUAL OIL
Millard C. Bryson, Conway, Joel D. McKinney, Indiana, Robert A. Titmus, Pittsburgh, and Frederick K. White, Allison Park, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.
Filed Jan. 10, 1972, Ser. No. 216,448
The portion of the term of the patent subsequent to Nov. 27, 1990, has been disclaimed
Int. Cl. C10l *1/04;* **C10g** *11/04*
U.S. Cl. 208—16 **14 Claims**



A gasoline is produced by zeolitic riser cracking of a distillate gas oil boiling below 1050° F. together with an amount less than 25 volume percent of hydrodesulfurized crude oil residue boiling above 1050° F. The proportion in the gasoline of the cracked products of the hydrodesulfurized residue oil constituting an increased volumetric gasoline yield and elevating the octane value of the lowest octane 100° F. boiling range fraction of the cracked products in the gasoline derived exclusively from the distillate gas oil boiling range hydrocarbons.

3,835,024
METHOD FOR MANUFACTURING PITCH
Kozo Ueda, Kyoto, Jitsumi Kimoto, Takarazuka, and Mitsuru Moritake, Suita, Japan, assignors to Osaka Gas Company, Limited, Osaka-shi, Japan
No Drawing. Continuation-in-part of application Ser. No. 126,356, Mar. 19, 1971, now Patent No. 3,692,663. This application Sept. 11, 1972, Ser. No. 287,828
Int. Cl. C10c *3/02*
U.S. Cl. 208—22 **8 Claims**

A method for manufacturing pitch which comprises heating a starting tar to a temperature of 320 to 470° C. under an increased pressure of at least one kg./cm.² gauge to produce gas, oil and pitch and separating the resultant pitch by distillation from the oil, said starting tar being at least one species selected from the group consisting of

(a) coal tar having a flash point of 30 to 140° C. and absolute viscosity of 20 to 1000 centipoises at 50° C. and containing 5 to 30% by weight of 0 to 270° C. fraction, and
(b) oil gas tar having a flash point of 20 to 130° C. and absolute viscosity of 10 to 500 centipoises at 50° C. and containing 10 to 35% by weight of 0 to 270° C. fraction.

3,835,025
PROCESS FOR THE PRODUCTION OF HIGH PURITY NORMAL PARAFFINS
Max Kunert, Neu-Wulmstorf, and Lothar Sandhack, Rheurdt, Germany, assignors to Deutsche Texaco Aktiengesellschaft, Hamburg, Germany
No Drawing. Filed Apr. 25, 1973, Ser. No. 354,283
Claims priority, application Germany, Apr. 27, 1972, P 22 20 621.9
Int. Cl. C07b *21/00;* **C10g** *43/04*
U.S. Cl. 208—25 **10 Claims**

High purity n-paraffins are produced in a urea dewaxing process incorporating a repulping step wherein the repulping of a powdery adduct is conducted at a temperature above the adduct forming temperature but below the adduct decomposition temperature followed by cooling the mixture to the adduct forming temperature.

3,835,026
METHOD OF PREPARING HYDROCRACKING CATALYSTS AND PROCESS
Sinji Takase, Kawasaki, and Tomonori Shioiri, Yokohama, Japan, assignors to Nippon Oil Company, Limited, Tokyo, Japan
No Drawing. Filed Nov. 10, 1971, Ser. No. 197,365
Claims priority, application Japan, Nov. 14, 1970, 45/99,809
Int. Cl. C10g *13/02*
U.S. Cl. 208—111 **4 Claims**

Method of preparing hydrocracking catalysts which comprises utilizing crystalline aluminosilicate of the zeolite type with openings from about 5 to 15 A. in their largest dimension to support at least one metal of the platinum group or a compound of such metal in the proportion from about 0.01 to 20% by weight based on the metal, and thereafter halogenating the resulting aluminosilicate composition with one or more halogenated hydrocarbons containing fluorine and/or chlorine at a temperature from 0° C. to 400° C. to a halogen content from about 0.05 to 15% by weight based on the weight of the substrate, and process for hydrocracking hydrocarbons which comprises contacting such hydrocarbons with said catalyst in the presence of a hydrogen-containing gas at a pressure from normal to 200 kg./cm.² and a temperature from 150° C. to 600° C.

3,835,027
HYDROGENATIVE CONVERSION PROCESSES AND CATALYST FOR USE THEREIN
John W. Ward, Yorba Linda, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.
No Drawing. Filed Apr. 17, 1972, Ser. No. 244,947
Int. Cl. C10g *13/02, 31/14*
U.S. Cl. 208—111 **10 Claims**

Hydrocarbon conversion methods employing unique catalyst compositions exhibiting improved conversion characteristics particularly as regards denitrogenation and/or cracking selectivity to predetermined boiling range products involve the use of a catalytic combination of zeolitic aluminosilicates, alumina, and at least one of the metals, oxides and sulfides of Periodic Groups

VI and VIII, prepared by the method including the steps of thermally activating at least a major portion of the alumina at a temperature of at least about 600° F. prior to combination with both the aluminosilicate and the hydrogenation component, forming an aggregate from an intimate admixture of the alumina, aluminosilicate and hydrogenation component and thermally activating the resultant aggregate. Midbarrel hydrocracking processes of higher selectivity and superior denitrogenation methods are described.

3,835,028
HYDROCRACKING PROCESS WITH REJUVENATED CATALYST

John W. Ward, Yorba Linda, and Danford E. Clark, Fountain Valley, Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

No Drawing. Original application Oct. 29, 1970, Ser. No. 85,241, now Patent No. 3,692,692, dated Sept. 19, 1972. Divided and this application Aug. 10, 1972, Ser. No. 279,712

Int. Cl. C10g *13/02;* **B01j** *11/02*

U.S. Cl. 208—111 **9 Claims**

Siliceous zeolite catalysts comprising zeolitic mono- and/or divalent metal cations and a non-zeolitic Group VIII metal hydrogenating component supported thereon, which catalysts have undergone damage by thermal and/or hydrothermal stresses resulting in a maldistribution of the metal components, are rejuvenated in activity by a sequential treatment with an aqueous ammonium salt to exchange out at least a portion of the zeolitic mono- and/or divalent metal ions, and with aqueous ammonia to effect a redistribution of the Group VIII metal. The treatments may be performed in either order.

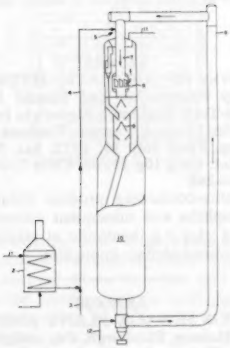
3,835,029
DOWNFLOW CONCURRENT CATALYTIC CRACKING

Lewis G. Larson, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Apr. 24, 1972, Ser. No. 246,657

Int. Cl. B01j *9/20;* **C10g** *11/00*

U.S. Cl. 208—113 **1 Claim**



In a downflow cocurrent catalytic cracking operation, products of increased value are obtained by introducing the cracking stock, as a vapor, into contact with a zeolite-type catalyst and steam and employing a contact time within the range of from about 0.2 to about 5 seconds.

3,835,030
CRYSTALLINE ALUMINO-SILICATE CATALYSTS FOR CATALYTIC CRACKING

William Judson Mattox and William Floyd Arey, Jr., Baton Rouge, La., assignors to Esso Research and Engineering Company

No Drawing. Continuation of application Ser. No. 469,895, July 6, 1965, which is a continuation-in-part of application Ser. No. 168,548, Jan. 24, 1962, both now abandoned. This application Oct. 16, 1972, Ser. No. 297,761

Int. Cl. B01j *9/20;* **C01b** *33/28;* **C10g** *11/18*

U.S. Cl. 208—120 **18 Claims**

Hydrocarbon oils are catalytically cracked with a catalyst comprising a crystalline alumino-silicate which has been base exchanged with both (1) hydogen ions and/or ions capable of conversion to hydrogen ions, and (2) cations of metals selected from Group IB through Group VIII of the Periodic Table.

3,835,031
CATALYTIC CRACKING WITH REDUCED EMISSION OF SULFUR OXIDES

Ralph J. Bertolacini, Chesterton, and Gerald M. Lehmann, Highland, Ind., and Eugene G. Wollaston, Chicago, Ill., assignors to Standard Oil Company, Chicago, Ill.

No Drawing. Filed May 23, 1973, Ser. No. 363,082

Int. Cl. B01j *11/68;* **C01b** *17/56*

U.S. Cl. 208—120 **10 Claims**

A cyclic fluidized catalytic cracking process is operated with a catalyst comprising molecular sieve in a silica-alumina matrix, impregnated with one or more Group IIA metal oxides to provide from about 0.25 to about 5.0 wt. percent of Group IIA metal or metals. The emission of sulfur oxides in the regenerator stack gases is decreased by at least about 50%.

3,835,032
CATALYTIC CRACKING WITH SILVER-RARE EARTH OR COPPER-RARE EARTH EXCHANGED Y-TYPE ZEOLITE

Geoffrey E. Dolbear, Columbia, and John S. Magee, Cooksville, Md., assignors to W. R. Grace & Co., New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 166,243, July 26, 1971. This application Mar. 26, 1973, Ser. No. 344,963

Int. Cl. C10g *11/02*

U.S. Cl. 208—120 **6 Claims**

A silver-rare earth or copper-rare earth exchanged zeolite cracking catalyst capable of producing high octane gasoline of increased aromatic content. Silver or copper ions in combination with rare earth ions are exchanged into a synthetic Y-type zeolite using a combination of exchange and calcination steps. The exchanged zeolite is advantageously combined with a major portion of inorganic oxide matrix to produce a catalyst suitable for use in standard commercial fluid and moving bed cat-cracking units.

3,835,033
SULFUR REMOVAL FROM MOLTEN MEDIA

John J. Dugan and Keith C. Yao, Sarnia, Ontario, Canada, assignors to Esso Research and Engineering Company

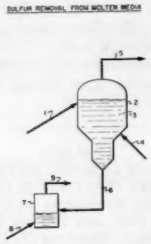
Filed Aug. 14, 1972, Ser. No. 280,184

Int. Cl. C10g *9/34*

U.S. Cl. 208—125 **24 Claims**

Sulfur is recovered from a molten salt mixture containing metal sulfides by contacting the metal sulfides with steam in a molten salt mixture containing a glass-forming oxide in combination with an alkali or alkaline earth metal oxide or hydroxide, including mixtures thereof, at a temperature in the range of from above about the melting point of said molten salt media to about 2000° F.

The sulfur is recovered from the molten media as an essentially dry, highly concentrated, hydrogen sulfide stream. Preferably, the mole ratio of the alkali and/or alkaline earth metal oxide and/or hydroxide expressed as the oxide thereof to the glass-forming oxide is maintained in the range of below about 3 in order to significantly increase the rate of desulfurization of the molten media. In a preferred embodiment, the alkali or alkaline earth metal sulfides are present in the molten media due to contacting a carbonaceous material with a gaseous stream con-



taining oxygen at elevated temperatures in order to gasify the carbonaceous materials to carbon oxides and to convert the sulfur present in the carbonaceous materials to alkali or alkaline earth metal sulfur oxides. The sulfur oxides predominantly in the molten media in the form of alkali or alkaline earth metal sulfates and sulfites are then reduced, for example, by carbon to their alkali or alkaline earth metal sulfide form. The carbonaceous materials such as coke or coal may be introduced into the molten-media or formed in situ during the cracking of a hydrocarbon feedstock in the molten media.

3,835,034

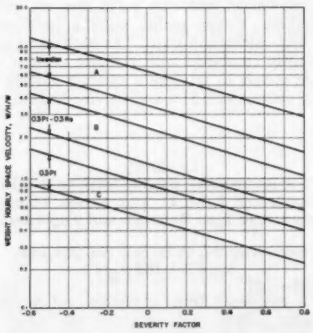
HIGH SEVERITY REFORMING PROCESS WITH A PLATINUM-IRIDIUM CATALYST

John H. Sinfelt, Berkeley Heights, and Allan E. Barnett, Westfield, N.J., assignors to Esso Research and Engineering Company

Continuation-in-part of application Ser. No. 194,461, Nov. 1, 1971, which is a continuation-in-part of application Ser. No. 883,601, Dec. 9, 1969, now abandoned. This application Apr. 12, 1973, Ser. No. 350,386

Int. Cl. C10g *35/06;* **B01j** *11/78*

U.S. Cl. 208—139 **8 Claims**



Naptha feed stocks are converted to high octane products at high severity conditions utilizing a catalyst comprising alumina in association with 0.15 to 0.75 weight percent platinum, 0.15 to 0.45 weight percent iridium and 0.3 to 2.0 weight percent chlorine, each based on total catalyst, the surface area of the platinum and iridium on the alumina being at least about 200 square meters per gram of platinum and iridium as determined by carbon monoxide chemisorption techniques. The catalyst should contain less than about two atoms of sulfur per atom of platinum and iridium and be substantially free of alkali and alkaline earth metal constituents.

3,835,035

METHOD OF PURIFYING LUBRICATING OILS

Morton Fainman, 11200 Homedale St., Los Angeles, Calif. 90049, and Charles Strouse McAuley, 9579 Casanes Ave., Downey, Calif. 90240

No Drawing Filed July 30, 1973, Ser. No. 383,706

Int. Cl. C10m *11/00*

U.S. Cl. 208—181 **30 Claims**

A method of purifying used lubricating oils comprising the following steps:

1. Admixing the used lubricating oil with a mutually soluble predominantly hydrocarbon liquid diluent which preferably has a boiling range within the temperature region of about 100° F. to about 550° F.;

2. Admixing the diluted lubricating oil with a water miscible alcohol and water mixture containing a small amount of an acid, and

3. Centrifuging to remove sludge and metal compounds from the oil and to separate the diluted oil phase from the alcohol-water phase to provide a purified organic layer having a low ash content.

3,835,036

DRYCLEANING COMPOSITIONS

Herman Roy Jackson, 1981 San Marco Blvd., Jacksonville, Fla. 32207

No Drawing. Original application July 30, 1971, Ser. No. 167,863, now Patent No. 3,766,075. Divided and this application July 20, 1973, Ser. No. 381,199

Int. Cl. C10g *29/00, 33/04*

U.S. Cl. 208—249 **3 Claims**

Residual moisture and sulfur and other residual reducing agent impurities contained in drycleaning solvents are removed by adding to the solvents an unsubstituted aromatic hydrocarbon or a halogen or alkyl substituted aromatic hydrocarbon and dried cellulosic material on which has been precipitated a fine deposit of lead dichromate. The same materials may also be added to petroleum products in order to remove sulfur impurities therefrom.

3,835,037

PURIFICATION OF AROMATIC HYDROCARBONS

John Anthony Fairweather and Ronald James Dalton, Stockton-on-Tees, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed July 17, 1972, Ser. No. 272,497

Int. Cl. C10g *25/04;* **C07c** *7/02*

U.S. Cl. 208—260 **4 Claims**

The aromatics-containing product obtained after reforming of naphtha and subsequent solvent extraction is treated with a clay e.g. bentonite at relatively low temperatures to remove olefinic impurities.

3,835,038

ACTIVATED SEWAGE PLANT AND PROCESS

Donald F. Heaney, Pittsburgh, Pa., assignor to Dravo Corporation, Pittsburgh, Pa.

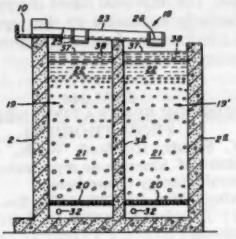
Original application Jan. 12, 1970, Ser. No. 2,103, now Patent No. 3,713,543. Divided and this application Oct. 27, 1972, Ser. No. 301,321

Int. Cl. B01d *23/24;* **C02c** *1/06*

U.S. Cl. 210—4 **2 Claims**

There is disclosed an activated sewage disposal plant of the compact or so-called "packaged" type and a method of processing sewage wherein a fast filter is provided

through which the effluent liquid from the primary processing is passed, provision being made for backwashing the fast-flow filter from time to time with the backwash



being collected in a well or vessel from which it is recycled at a controlled rate to the raw sewage. The entire plant can be embodied in a compact package unit, one common type of which comprises two concentric tanks, the outer one of which is divided into several compartments.

3,835,039

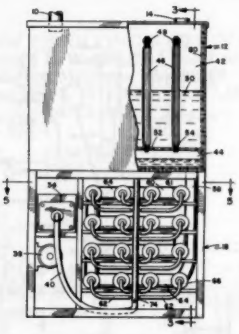
WASTE WATER TREATMENT SYSTEM

David Ciambrone, El Cajon, Calif., assignor to Cubic Corporation, San Francisco, Calif.

Filed Dec. 22, 1972, Ser. No. 317,729

Int. Cl. C02c *1/04*

U.S. Cl. 210—17 **17 Claims**



A system for treating waste water by feeding the waste water into an aerobic treatment separator, which separator utilizes a plurality of fibers bunched into groups providing recesses for aerobic bacteria with the ends of the fibers fitting into openings in the bottom of the separator, for providing filtering of the water passing through the separator and subject to aerobic treatment. The waste water from the separator is then treated by ozone in conduits which ozone and air gas under pressure moves the filtered waste water and treats and kills bacteria in the waste water through the conduits to a surge tube with the waste water and ozone moving in the same direction. The treated water is then filtered for discharge.

3,835,040

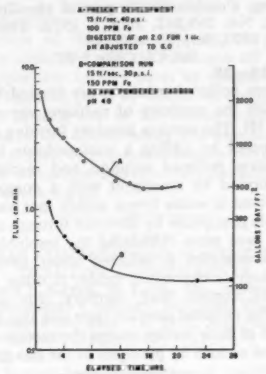
CROSS-FLOW FILTRATION PROCESS

Harvey A. Mahlman, Knoxville, and Warren G. Sisson, Oak Ridge, Tenn., assignors to the United States of America as represented by the United States Atomic Energy Commission

Filed Apr. 4, 1973, Ser. No. 347,755

Int. Cl. C02c *5/06*

U.S. Cl. 210—23 **5 Claims**



A process is provided for removing the organic and phosphate content of an aqueous feed containing same which comprises adding an effective amount of at least one additive selected from the group consisting essentially of a salt which hydrolyzes to a hydrous oxide, adjusting the pH of said feed to a value below 3.5, digesting said feed in air at a temperature in the range 32° to 100° F., increasing the pH of the digested feed to a value in the range 5.5 to 7.5, and then filtering the digested feed.

3,835,041

PROCESSES FOR THE PURIFICATION OF WASTE EFFLUENTS

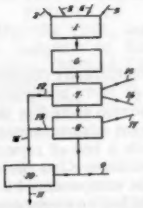
Roy Arthur Grant, Poole, England, assignor to Tasman Vaccine Laboratory Limited, Upper Hutt, New Zealand

Continuation-in-part of application Ser. No. 841,430, July 14, 1969, now Patent No. 3,697,419. This application July 3, 1972, Ser. No. 268,299

The portion of the term of the patent subsequent to Mar. 30, 1988, has been disclaimed

Int. Cl. B01d *15/04*

U.S. Cl. 210—27 **2 Claims**



A process is disclosed for removing protein from waste effluents containing same using ion exchange methods.

The ion exchange resin is a cross linked regenerated cellulose matrix modified by the introduction of groups capable of cation exchange or groups capable of anion exchange.

3,835,042
REMOVAL AND RECOVERY OF CHROMIUM FROM POLLUTED WATERS

Jean Marc Lalancette and Bernard Coupal, Sherbrooke, Quebec, Canada, assignors to Universite de Sherbrooke, Sherbrooke, Quebec, Canada

No Drawing. Continuation-in-part of abandoned application Ser. No. 269,862, July 7, 1972. This application Sept. 26, 1973, Ser. No. 400,832

Int. Cl. C02c *5/02*

U.S. Cl. 210—28 **5 Claims**

Chromium polluted solutions are treated by a process which avoids the necessity of reducing chromium VI to chromium III. The process involves forming a chromium sulfide complex by adding a water-soluble ferric salt to the chromium polluted solution and insolubilizing the complex formed by treatment with a compound which when dissolved in water forms sulfide ions and separating the insoluble precipitate by filtration through a bed of peat moss. The peat moss containing the insoluble chromium iron sulfide complex is oxidized under heat to recover the chromium as chromium oxide. If other metals such as cadmium, copper, lead, mercury, iron and zinc are present in the polluted solution they will also be recovered in the form of their oxides except the mercury which will be recovered as such by pyrolysis of the flue gases.

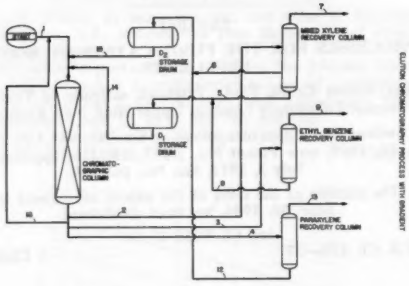
3,835,043
MINIMIZING ELUTION VOLUMES IN LIQUID CHROMATOGRAPHIC SEPARATIONS

Paul R. Geissler, Edison, and Frank J. Healy, Morristown, N.J., assignors to Esso Research and Engineering Company

Filed Dec. 21, 1972, Ser. No. 317,118

Int. Cl. B01d *15/08*

U.S. Cl. 210—31 C **9 Claims**



In a liquid chromatography commercial process for the separation of two or more components contained in admixture in a feedstream including the steps of (a) contacting the feedstream mixture containing the components to be separated with a bed of crystalline aluminosilicate adsorbent at conditions to effect the selective retention of two or more of the components by said adsorbent, (b) passing through said bed an eluent selected from the group consisting of aromatics and substituted aromatics, (c) recovering from said bed a stream or streams containing at least a portion of the less selectively adsorbed components, and (d) recovering a stream substantially enhanced in concentration of said selectively adsorbed components relative to other components of feedstream wherein the improvement comprises increasing the strength of the eluting agent in the liquid carrier during the operation of the steps (a) and (b) above to thereby effect the desired separation under conditions that cause low elution volume to feed ratios. The improved liquid chromatography process is particularly applicable to the separation of paraxylene and ethylbenzene from a C_8 aromatic isomer mixture containing ethylbenzene.

3,835,044
PROCESS FOR SEPARATING NEPTUNIUM FROM THORIUM

Wallace W. Schulz, Richland, Wash., assignor to the United States of America as represented by the United States Atomic Energy Commission

No Drawing. Filed Oct. 16, 1972, Ser. No. 298,135

Int. Cl. C02b *1/56*

U.S. Cl. 210—37 **8 Claims**

A process is disclosed for separating neptunium from thorium in aqueous solution which comprises contacting the aqueous solution with a weak-base anion exchange resin whereby the neptunium is preferentially adsorbed on the weak-base anion exchange resin to a greater extent than for the strong-base (quaternary group) resins hitherto used. The process is particularly useful in separating and recovering neptunium from atomic energy plant feed solutions comprising neptunium, uranium, thorium, protactinium, niobium, ruthenium, rhodium and zirconium. The preferred weak-base anion exchange resins are of the macroreticular type such as those disclosed in British Pat. 932,125.

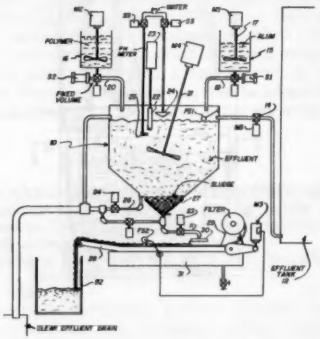
3,835,045
METHOD OF FLOCCULATING

Vahan A. Hussisian, 512 E. Lake Shore Drive, Barrington, Ill. 60010

Filed Aug. 24, 1972, Ser. No. 283,272

Int. Cl. B01d *21/01;* **C02b** *1/20*

U.S. Cl. 210—49 **7 Claims**



A flocculating method and apparatus wherein wash water is delivered into a flocculating tank, either directly or from a holding tank. Flocculating chemicals are proportioned into the flocculating tank and mixed with the wash water, until the pH thereof reaches a pre-established level. At this time, the wash water is permitted to settle for a fixed period of time, to permit the flocculated ink residue to settle to the bottom of the flocculating tank. Thereafter, the clear effluent is drained off, and then the sludge is discharged by gravity onto a filter table where it is de-watered through a roll-fed web of filter paper. The web of filter paper with the de-watered sludge on it is conveyed into disposal means, such as a disposal bin.

3,835,046
DEWATERING OF AQUEOUS SUSPENSIONS
Alfred J. Restaino, Wilmington, Del., assignor to ICI America Inc., Wilmington, Del.
No Drawing. Filed Feb. 14, 1972, Ser. No. 226,280
Int. Cl. B01d *21/01*
U.S. Cl. 210—54 **19 Claims**

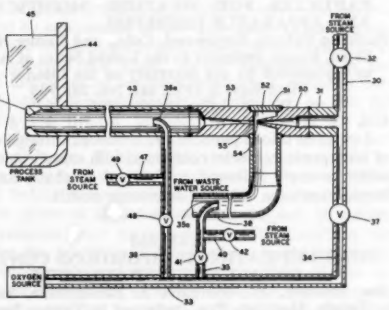
A process is provided for dewatering aqueous suspensions of solid materials which comprises mixing into such a suspension a water-soluble, cationic polymer of N-vinyl imidazole or salt thereof, the amount of N-vinyl imidazole polymer employed being sufficient to condition the suspension for dewatering and separating water from the conditioned suspension.

3,835,047
METHOD FOR TREATING SOLUTIONS CONTAINING CYANOHYDRINS
Pierre Colin, Saint-Avold, France, assignor to Produits Chimiques Ugine Kuhlman, Paris, France
No Drawing. Filed Feb. 10, 1972, Ser. No. 225,290
Claims priority, application France, Feb. 11, 1971, 7104553
Int. Cl. C02b *1/38*
U.S. Cl. 210—63 **9 Claims**

The instant invention relates to a method for treating aqueous solutions containing cyanohydrins for the purpose of rendering the solutions non-toxic, which comprises reacting the cyanohydrins contained in solution with hydrogen peroxide to form biodegradable oxamide.

The instant invention also relates to a method for treating solutions containing at least a metallic salt of hydrocyanic acid, hereinafter referred as cyanide, for the purpose of rendering said solutions non-toxic, which comprises reacting the cyanides contained in the solutions with carbonyl compounds to convert the cyanides to the corresponding cyanohydrins, reacting said cyanohydrins in solution with hydrogen peroxide to form biodegradable oxamide.

3,835,048
METHOD OF DISSOLVING GASES IN LIQUIDS
Fredrick L. Walter, 2304 Oak Lane, Rolling Meadows, Ill. 60008
Filed Aug. 2, 1972, Ser. No. 277,352
Int. Cl. B01f *3/04*
U.S. Cl. 210—63 **13 Claims**



A gas is dissolved in a liquid by mixing the gas with condensable vapor such as steam and introducing the vapor and gas to the liquid where the vapor condenses to permit dispersed bubbles of the gas to dissolve in the liquid. In another embodiment gas, condensable vapor, and some liquid are mixed, the pressure of the mixture is increased to facilitate dissolution of the gas in the liquid, and the mixture is introduced into more liquid.

3,835,049
OIL SPILL CONTROL
Jack A. King, Tulsa, Okla., assignor to Cities Service Oil Company, Tulsa, Okla.
No Drawing. Continuation-in-part of abandoned application Ser. No. 167,805, June 30, 1971. This application Aug. 23, 1973, Ser. No. 390,835
Int. Cl. C02b *9/02*
U.S. Cl. 210—63 **6 Claims**

Hydrocarbon oil floating on the surface of water is recovered by admixing with the hydrogen oil in the presence of oxygen one to fifty parts by weight of a drying oil per one hundred parts by weight of the hydrocarbon oil, wherein at least one of ten carbon-to-carbon bonds of the drying oil are double bonds and wherein the drying oil contains at least one carbonyl moiety per molecule, to coagulate the admixture, and removing the admixture from the surface of the water.

3,835,050
GREASE COMPOSITIONS HAVING HIGH TRACTIVE COEFFICIENTS
Richard L. Green, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.
No Drawing. Filed May 13, 1971, Ser. No. 143,237
Int. Cl. C10m *7/02, 7/12, 7/30*
U.S. Cl. 252—28 **11 Claims**

Greases having high coefficients of traction are prepared by thickening tractive fluids comprising synthetic cyclic hydrocarbons having a coefficient of traction in excess of about 0.06 with an organic or inorganic thickener such as silica or polyurea. The greases are useful as lubricating agents and as power transmitting fluids in tractive drives.

3,835,051
CYANOETHOXYLATED FATTY ACID METAL SOAP THICKENED GREASES
Harold E. Kenney, Jenkintown, Edward T. Donahue, Philadelphia, and Gerhard Maerker, Oreland, Pa., assignors to the United States of America as represented by the Secretary of Agriculture
No Drawing. Original application July 25, 1972, Ser. No. 275,011. Divided and this application Aug. 24, 1973, Ser. No. 391,181
Int. Cl. C10m *5/20, 7/24, 7/30*
U.S. Cl. 252—33.6 **16 Claims**

Monohydroxy fatty acids are cyanoethylated and the resulting cyanoethoxy derivative is treated with the desired alkali, alkaline earth metal or other metallic base to form a soap which is dispersed in a petroleum oil base or a synthetic base oil of the diester type to form a grease.

3,835,052
EMULSION FOR HOT ROLLING ALUMINUM PRODUCTS
Ewell E. McDole, Danville, Calif., and Frank L. Howard, Bountiful, Utah, assignors to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.
No Drawing. Continuation-in-part of abandoned application Ser. No. 199,040, Nov. 15, 1971. This application May 10, 1973, Ser. No. 358,844
Int. Cl. C10m *1/22*
U.S. Cl. 252—49.5 **6 Claims**

This invention relates to the addition of polybutene and saturated fatty alcohols to a neat oil composition comprising hydrocarbon base oils, lubricity agents, emulsifiers and the like. When mixed with water, the neat oil with additives provides an emulsion which minimizes pickup in the hot rolling of aluminum products and provides a rolled product having substantially improved surface characteristics.

3,835,053
LUBRICATING COMPOSITIONS
Dale J. Meier, Midland, Mich., and David J. St. Clair, Bethalto, Ill., assignors to Shell Oil Company
No Drawing. Filed Nov. 13, 1972, Ser. No. 306,086
Int. Cl. C10m *1/18*
U.S. Cl. 252—59 **7 Claims**

Lubricating oil compositions for internal combustion engines contain as a thickener and viscosity index improving agent a minor but effective amount of a hydrogenated isoprene homopolymer having been produced by solution polymerization with a lithium-hydrocarbyl initiator and having a 1,4-content prior to hydrogenation of at least 85% and an average molecular weight between about 40,000 and 225,000, said polymer having been hydrogenated sufficiently to reduce at least about 80% of its double bonds. The compositions have excellent shear stability and can be formulated to pass multi-grade engine oil classifications.

3,835,054
METHOD FOR PREPARATION OF THERMAL INSULATION BOARD
Edward W. Olewinski, Stickney, and Linda J. Pluta, North Riverside, Ill., assignors to Nalco Chemical Company, Chicago, Ill.
No Drawing. Filed July 10, 1972, Ser. No. 270,365
Int. Cl. C04b *43/02;* **F16l** *59/00*
U.S. Cl. 252—62 **3 Claims**

A method or procedure for the preparation of thermal insulation board wherein a ceramic fiber such as Fiberfrax is slurried with silica sol and sequentially with a source of alumina. The solution is adjusted to a slightly acid-neutral pH of 5–7 and the slurry is flocculated with a minor amount of an anionic polymer consisting of a latex of acrylamide/acrylic acid. The flocculated mix is subsequently vacuum formed and dried under conventional procedures.

3,835,055
ELECTROLYTES FOR LOW SERIES-RESISTANCE, ALUMINUM ELECTROLYTIC CAPACITORS
Bernard Francois Gustave Chesnot, Louveciennes, France, assignor to Les Condensateurs Sic-Safco, Columbes, France
No Drawing. Continuation-in-part of application Ser. No. 139,236, Apr. 30, 1971, which is a continuation of application Ser. No. 770,433, Oct. 24, 1968, both now abandoned. This application Oct. 12, 1972, Ser. No. 296,903
Claims priority, application France, Oct. 27, 1967, 126,113
Int. Cl. H01g *9/02*
U.S. Cl. 252—62.2 **9 Claims**

An aqueous electrolyte for aluminum-anode capacitors is comprised mainly of an acid such as maleic acid, a maleate of an aliphatic amine such as triethylamine, orthophosphoric acid, a solvent such as dimethylformamide, and optionally a small quantity of boric acid. Such an electrolyte offers high electrical conductivity and for all practical purposes a sufficiently high maximum build-up voltage, the capacitors which utilize such electrolyte being usable over a wide temperature range.

3,835,056
FUNCTIONAL FLUID COMPOSITIONS
Richard F. Heinze and John F. Herber, St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.
No Drawing. Filed Oct. 31, 1966, Ser. No. 590,511
Int. Cl. C09k *3/02*
U.S. Cl. 252—78 **11 Claims**

Functional fluid compositions comprising an aromatic compound selected from polyphenyl ethers, polyphenyl thioethers, dihalogenated diphenyl ethers, halogenated phenoxypyridines or mixtures thereof and a halogenated compound selected from halobenzenes, perhalodienes and perhalocyclodienes having not less than 4 nor more than 8 carbon atoms or mixtures thereof which compositions are particularly useful as hydraulic fluids.

3,835,057
ANTI-BACTERIAL DETERGENT BAR
Wai Ming Cheng, Ellesmere Port, James Francis Davies, Bromborough, and Brian Anthony Pethica, Altringham, England, assignors to Lever Brothers Company, New York, N.Y.
No Drawing. Continuation of abandoned application Ser. No. 744,686, July 15, 1968. This application Oct. 6, 1971, Ser. No. 187,207
Int. Cl. C11d *3/48, 9/50*
U.S. Cl. 252—107 **3 Claims**

An improved anti-bacterial detergent bar is obtained by incorporating an anti-bacterial compound in the mixture from which the bar is formed in a potentiator. Anti-bacterial compounds to which the improvement can be applied have a minimum inhibitory concentration against Staph. aureus of less than 5 p.p.m., a solubility in water of less than 1,000 p.p.m. at 20° C. and a melting point of at least 70° C. The potentiator is a solvent capable of dissolving at 25° C. at least 25% of its own weight of the anti-bacterial compound.

3,835,058
PROCESS OF PREPARING BAR SOAP COMPOSITIONS AND PRODUCTS THEREOF
Ronald E. White, Springfield Township, Hamilton County, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
Continuation of abandoned application Ser. No. 99,883, Dec. 21, 1970. This application Jan. 23, 1973, Ser. No. 326,230
Int. Cl. C11d *9/32, 17/02*
U.S. Cl. 252—121 **20 Claims**

A process of preparing aerated free fatty acid-containing soap compositions having uniform texture, appearance and density which comprises subjecting an admixture of soap and free fatty acid, the free fatty acid comprising from about 0.75% to about 15% of the mixture, to high-intensity shearing. The sheared soap mixture is processed into bars in known manner by cooling, extruding, cutting and stamping. The resulting soap bars are characterized by desirable lathering and feel characteristics and are uniform in surface texture, color and density.

3,835,059
METHOD OF GENERATING ICE NUCLEI SMOKE PARTICLES FOR WEATHER MODIFICATION AND APPARATUS THEREFOR
Norihiko Fukuta, Englewood, Colo., and Young H. Paik, Seoul, Korea, assignors to the United States of America as represented by the Secretary of the Interior
Filed Sept. 5, 1972, Ser. No. 285,995
Int. Cl. A01g *15/00;* **C09k** *3/30*
U.S. Cl. 252—305 **6 Claims**

Ice-nuclei smoke particles are produced through contact of an organic ice-nuclei compound with superheated steam under pressure followed by internal adiabatic and isentropic expansion using a supersonic nozzle.

3,835,060
DEMULSIFICATION COMPOSITIONS CONTAINING ALKYL ETHER SULFATES
Jim Maddox, Jr., Margaret J. Zimmerman, and Ray Tuggle, Houston, Tex., assignors to Texaco Inc., New York, N.Y.
Filed Aug. 21, 1972, Ser. No. 282,201
Int. Cl. B01d *17/04*
U.S. Cl. 252—332 **9 Claims**

Oil and water emulsions may be broken faster and more effectively by using a combination of certain alkyl ether sulfates and conventional demulsifiers than with either of the above types of compounds alone.

3,835,061

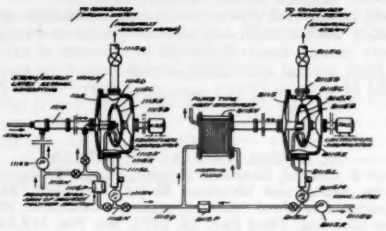
HIGH POLYMER LATICES AND METHODS AND MEANS FOR PRODUCING SAME

Oliver W. Burke, Jr., 506 Intracoastal Drive, Fort Lauderdale, Fla. 33304

Application Dec. 18, 1968, Ser. No. 784,596, now Patent No. 3,644,263, which is a continuation-in-part of applications Ser. No. 621,997, Mar. 7, 1967, now Patent No. 3,503,917, Ser. No. 691,823, Dec. 19, 1967, now abandoned, and Ser. No. 767,790, Oct. 15, 1968, now Patent No. 3,622,127. Divided and this application Sept. 3, 1971, Ser. No. 177,823

Int. Cl. B01d; B01f; B01j *13/00*

U.S. Cl. 252—359 A 14 Claims



The preparation of aqueous latices from solvent dispersions of elastomers and other high polymer compositions has presented problems including excessive viscosity during processing and foaming and coagulation, which have produced losses and increased costs. Herein combinations of steps and apparatus are disclosed which reduce or eliminate various of these problems, especially coagulum; enable the preparation of latices of high solids content; enable preparation of high solids content latices of grafted or filler extended or filler-reinforced elastomers; enable preparation of high solids latices of low molecular weight polymer which are then modified to materially increase the molecular weight of the polymer; and enable the preparation of improved stable latices both dilute and of high solids content, which are useful for example for adhesive and film forming purposes. The process in common with that of related copending applications is characterized, *inter alia*, by the establishment of a flow of steam as a continuous phase into which an emulsion of a cement of the polymer is dispersed as an aerosol of latex droplets in a solvent-vapor continuum, followed by coalescence of the latex droplets and separation of the resulting coalesced liquid phase from the resulting solvent-vapor phase. In one embodiment of the present disclosure an unstable emulsion is prepared employing only a limited quantity of emulsifier, so that the homogenizing thereof produces an emulsion the dispersed phase of which is only temporarily of precursor latex particle size. This unstable emulsion is converted to a stable latex by provisions for dispersing the same as the aerosol before coalescence of over 5% of the dispersed polymer phase of the emulsion into droplets of greater than precursor latex particle size (or for stabilizing the same by the addition of a secondary emulsifier to the same before such condition is reached without further reducing the size of the cement droplets of the dispersed phase), so that the latex in the aerosol and separated therefrom is kept free of coagulum during the coalescing of the latex droplets and the separation and further treatment, e. g. stripping and concentrating, with or without correlated further additions of emulsifier to stabilize the latex for storage or use.

The separation of the gaseous and liquid latex phases is preferably effected with the aid of partially concentrated liquid latex; and in certain embodiments herein disclosed a mixture of such partially concentrated latex commingled with water vapor generated therefrom is added to and commingled with the aerosol before or after at least a part of the aerosol has been coalesced, and the combined liquid phases and combined gas phases of the resulting mixture are thereafter separated. Also in certain embodiments of the invention a liquid flow of secondary emulsifier may be added to the uncoalesced or partially coalesced aerosol, or to the mixture thereof with the partially concentrated latex, prior to the separation of the gaseous and liquid phases thereof.

3,835,062

ELECTROCHEMICAL DEVICE ELECTROLYTE FOR CHEMICAL ANALYSIS

Conrad J. Feren and Robert W. Squires, Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Original application June 21, 1972, Ser. No. 265,085, now Patent No. 3,748,245. Divided and this application Mar. 28, 1973, Ser. No. 345,638

Int. Cl. G01n *27/26*; H01m *11/00*

U.S. Cl. 252—408 2 Claims

A high boiling electrolyte for use in a high temperature heat sterilizable electrolytic cell is disclosed. The electrolyte comprises sodium hydroxide, propionic acid and glycerol and has a boiling point of at least 135° C.

3,835,063

REGENERATION OF HALOGEN PROMOTED BIMETALLIC REFORMING CATALYST

Francis E. Davis, Jr., Woodbury, Walter R. Derr, Ashland, and Earle F. Ginter, Woodbury, N.J., assignors to Mobil Oil Corporation

Filed Mar. 27, 1970, Ser. No. 23,160

Int. Cl. B01j *11/18*, *11/80*; C10g *35/06*

U.S. Cl. 252—415 3 Claims

A halogenated reforming catalyst comprising platinum which has become deactivated with carbonaceous deposits during on-stream reforming is regenerated by the combination of (1) removing carbonaceous material by burning with an oxygen containing gas under conditions to avoid heat damage to the catalyst, (2) heating the catalyst with air to a temperature of about 900° F., (3) selectively chlorinating each catalyst bed with a moisture saturated air stream to a predetermined chloride level, (4) reducing the chlorided catalyst with hydrogen rich gas for a period of time in the range of 1 to 4 hours, (5) adding sulfur to each catalyst bed theoretically sufficient to sulfide the platinum component of the catalyst and (6) initiating on-stream reforming of naphtha in the presence of added hydrogen sulfide.

3,835,064

PROCESS FOR MANUFACTURING AN ACTIVATED CARBON

Takeshi Shinomiya, 6–2, 3-chome, Okuda; Yoshio Tarui, 8–10, 3-chome, Nakajima; and Shuhji Enomoto, 5–1, 1-chome, Shimoshinkita-machi, all of Toyama-shi, Toyama-ken, Japan

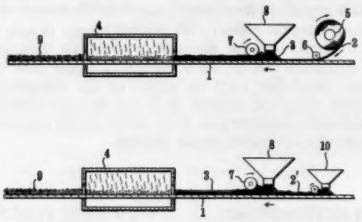
Filed Sept. 23, 1971, Ser. No. 183,087

Int. Cl. C01b *31/08*

U.S. Cl. 252—423 3 Claims

This invention solves two problems in the manufacture of activated carbon by activation with chemicals, namely, (a) the corrosion of the equipment with the chemicals used, and (b) improving the recovery efficiency of the chemicals, as well as making it posible to use phosphoric acid on an industrial scale. This is accomplished by placing on the conveyer system a heated plate which moves with the conveyer system. On this plate is a film or sheet of a corrosion inhibiting organic substance, which is

placed there to prevent corrosion and the waste of chemicals. Then, carbonaceous organic raw materials and activating chemicals are placed on said organic substance. The mixture is placed in a furnace and activated.



3,835,065

PROCESS FOR THE PREPARATION OF CATALYSTS FOR THE POLYMERISATION AND COPOLYMERISATION OF ETHYLENE

Paolo Colombo, Saronno, and Marco Galliverti, Legnano, Italy, assignors to Societá Italiana Resine S.I.R. S.p.A., Milan, Italy

No Drawing. Filed Nov. 27, 1972, Ser. No. 309,848
Claims priority, application Italy, Dec. 27, 1971, 32,956/71
Int. Cl. C08f *1/42*
U.S. Cl. 252—429 C **11 Claims**

Ethylene polymerisation and copolymerisation catalysts comprise an organometallic compound and the product of a treatment of a sulphite of calcium, magnesium, manganese or zinc with a liquid halogen containing compound of a transition metal, the sulphite having been obtained by bubbling sulphur dioxide through a solution or suspension of an oxide, hydroxide or salt of the metal with subsequent slow elimination of excess of the sulphur dioxide before recovery and drying of the sulphite.

3,835,066

CATALYTIC MIXTURE

Ronald F. Davies, Elkton, Md., and George J. Benvegno, Aston, Pa., assignors to Colonial Metals, Inc., Elkton, Md.

No Drawing. Filed Apr. 5, 1973, Ser. No. 348,075
Int. Cl. B01j *11/08*
U.S. Cl. 252—429 R **18 Claims**

A catalytic mixture includes a platinum-based compound, such as chloroplatinic acid or ammonium chloroplatinite, mixed with other constituents, including water. The acid could be mixed with various amounts of sodium citrate or with aluminum oxide, dextrose and triethanolamine. The ammonium chloroplatinite could be mixed with dimethyl formamide.

Each of these mixtures can be deposited onto pads used in catalytic heaters, for example, and heated to precipitate the platinum onto the pads.

3,835,067

METHOD FOR INTERCALATING CHROMIUM TRIOXIDE (CrO_3) IN GRAPHITE

Bernd Schneider, Beverly, Mass., assignor to Ventron Corporation, Beverly, Mass.

No Drawing. Filed Feb. 20, 1973, Ser. No. 333,739
Int. Cl. B01j *11/06*
U.S. Cl. 252—447 **3 Claims**

The invention provides a method for intercalating graphite in chromium trioxide (CrO_3) on a commercial scale. The method involves heating a layer of a mixture of particles of graphite and chromium trioxide at a temperature above 180° C. but below 250° C. until the intercalation is complete as shown by the change in color from brownish black to bluish black. It is essential that the thickness of the layer of the mixture shall not be greater than about three eighths of an inch and, preferably, about one quarter inch.

3,835,068

CATALYST PREPARATION

Kennard Dungan West, Morton, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

No Drawing. Filed July 25, 1972, Ser. No. 274,898
Int. Cl. B01j *11/40*
U.S. Cl. 252—455 Z **19 Claims**

By firing a powdered blend of one or more metals or alloys thereof with an expandible crystalline siliceous zeolite, catalytic structures are prepared which promote reduction of NO_x to less noxious vapor form. The obtained catalytic structures comprising a catalytic metal or alloy thereof intimately associated with or in a low density ceramic matrix are useful in treatment of exhaust gas from internal combustion engines containing noxious oxides of nitrogen (NO_x) particularly NO.

3,835,069

RUTHENIUM CATALYST SYSTEM

Haren S. Gandhi, Dearborn Heights, Joseph T. Kummer, Ann Arbor, and Mordecai Shelef, Southfield, Mich., assignors to Ford Motor Company, Dearborn, Mich.

No Drawing. Filed Dec. 26, 1972, Ser. No. 318,338
Int. Cl. B01j *11/08*
U.S. Cl. 252—462 **3 Claims**

A process is taught for producing a ruthenium catalyst. A ruthenate is presynthesized, ground into a fine powder, dispersed in a gamma alumina containing medium and applied as a slurry to a catalytic support. The ruthenate slurry is dried on the support and calcined. The product produced in this manner is desirable for use in the catalytic conversion in a reducing atmosphere of oxides of nitrogen. The ruthenium catalyst of the product produced by this method is resistant to volatilization when exposed to an oxidizing ambient.

3,835,070

HARD SURFACE CLEANERS

Charles A. Beck, Painesville, Ohio, assignor to Diamond Shamrock Corporation, Cleveland, Ohio

No Drawing. Filed Apr. 17, 1972, Ser. No. 244,926
Int. Cl. C11d *3/065*
U.S. Cl. 252—526 **7 Claims**

A predominantly aqueous hard surface cleaner particularly useful in household applications contains methylene chloride, a monoalkyl ether of ethylene glycol, a lower alkanol, an alkaline inorganic builder and a sulfated or sulfonated anionic surfactant.

3,835,071

RUG SHAMPOO COMPOSITIONS

William E. Allen, Laurel Springs, N.J., and Bob G. Gower, Park Forest, Ill., assignors to Atlantic Richfield Company, Philadelphia, Pa.

No Drawing. Continuation of abandoned application Ser. No. 877,414, Nov. 17, 1969. This application Mar. 24, 1972, Ser. No. 237,979
Int. Cl. C11d *1/10, 1/14*
U.S. Cl. 252—545 **11 Claims**

Rug shampoo compositions which dry to an easily removable brittle residue on the rug or upholstery after shampooing and avoid rapid resoiling are obtained by incorporating into rug shampoo compositions of a water-soluble, metal, ammonium or amine salt of a styrene-maleic anhydride polymer or its half-ester in amount sufficient to embrittle the shampoo residue left on the rug after shampooing. The conventional rug shampoo detergents, such as sodium or magnesium lauryl sulfate, or, if desired, conventional foam builders are employed in the rug shampoo formulations.

3,835,072

PHENOLIC RESIN ION EXCHANGE FIBERS

James Economy, Eggertsville, and Luis C. Wohrer, Lewiston, N.Y., assignors to The Carborundum Company, Niagara Falls, N.Y.

No Drawing. Filed Oct. 2, 1972, Ser. No. 293,876
Int. Cl. C08g 5/18
U.S. Cl. 260—2.1 C 10 Claims

An ion exchange fiber comprising a cured infusible phenolic resin having primary, secondary, tertiary or quaternary amine groups.

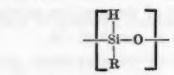
3,835,073

SUSPENSION POLYMERIZATION PROCESS

David Everitt Thimas, Cwmbran, Wales, assignor to Monsanto Limited, London, England

No Drawing. Filed Dec. 3, 1973, Ser. No. 421,208
Claims priority, application Great Britain, Dec. 14, 1972, 57,661/72
Int. Cl. C08j 1/26
U.S. Cl. 260—2.5 B 11 Claims

The process of the invention comprises polymerizing a vinylaromatic monomer in an aqueous suspension system in the presence of a suspending agent, a suspension polymerization catalyst and an alkyl hydrogen polysiloxane comprising the repeating unit



where R is an alkyl group having 1 to 4 carbon atoms.

3,835,074

JOINT CEMENT COMPOSITIONS

Armand J. Desmarais, New Castle, Del., assignor to Hercules Incorporated, Wilmington, Del.

No Drawing. Filed Apr. 26, 1973, Ser. No. 354,713
Int. Cl. C08f 37/16, 45/18
U.S. Cl. 260—17 3 Claims

Joint cements suitable for use with plaster wallboard are disclosed wherein the asbestos customarily used to impart water binding properties and pseudoplasticity is replaced by a water-insoluble, fibrous hydroxyethyl cellulose.

3,835,075

BUTADIENE RESINS AND PROCESS FOR PREPARATION

Stephen P. Boutsicaris, Akron, and Robert A. Hayes, Cuyahoga Falls, Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Continuation of application Ser. No. 158,031, June 29, 1971, which is a continuation-in-part of application Ser. No. 121,589, Mar. 5, 1971, which is a continuation of application Ser. No. 818,971, Apr. 24, 1969, which in turn is a continuation-in-part of application Ser. No. 715,521, Mar. 25, 1968, all now abandoned. This application Apr. 26, 1973, Ser. No. 354,563
Int. Cl. C08c 11/10; C08d 3/08, 9/06
U.S. Cl. 260—17.4 BB 41 Claims

This invention involves a process for preparing hard, tough, heat-resistant plastics by the peroxide curing of butadiene polymers having a dilute solution viscosity of 0.19–0.7 and having a high vinyl content and a narrow molecular weight distribution, using a peroxide which gives free radicals of the structure $R_2(CH_3)CO\cdot$. Although the peroxide curing of butadiene polymers generally results in products having elastomeric properties and being swellable in benzene, the process of this invention permits very rapid curing without crazing or cracking to give rigid, heat-resistant polymers. The butadiene polymers have at least 40%, preferably at least 70% by weight butadiene therein, advantageously having at least 80% in the vinyl-type of repeating units, the average molecular weight being at least 12,500 with a molecular weight distribution such that at least 50% and preferably at least 90% is above 10,000 molecular weight and at least 95% is above 2,000. The proportion of peroxide used, preferably dicumyl peroxide, is 0.5–6, preferably 1–5 parts per 100 parts of polymer, and the curing temperature is at least 250° F. (120° C.), preferably 300–350° F. (150–180° C.). This process lends itself to liquid compounding for the incorporation of the peroxide and any modifiers, and for mixing with filler.

3,835,076

AQUEOUS SEALER COMPOSITION OF AN EPOXY ESTER RESIN OF A MALEINIZED DRYING OIL FATTY ACID AND AN EPOXY RESIN AND AN ACRYLIC-EPOXY ESTER GRAFT COPOLYMER

Jeffery J. Jeffery, Davison, and Aloysius N. Walus, Flint, Mich., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Nov. 30, 1972, Ser. No. 310,951
Int. Cl. C08g 45/08; C09d 3/52, 3/58
U.S. Cl. 260—23 EP 12 Claims

The aqueous sealer composition contains a polymeric binder in an aqueous medium in which the polymeric binder comprises the following components:

(A) an epoxy ester resin of a maleinized drying oil fatty acid such as maleinized linseed oil fatty acids and an epoxy hydroxy polyether resin; and

(B) an acrylic-epoxy ester graft copolymer that has a backbone of methyl methacrylate, styrene, ethyl acrylate, acrylonitrile or mixtures thereof, contains 1–7% of methacrylic acid or acrylic acid which has been reacted with an alkylene imine and the polymeric side-chain segments of the graft copolymer are epoxy esters of an epoxy resin and an aliphatic dicarboxylic acid;

the novel composition forms a high quality coating composition and is particularly useful as a sealer composition for automobile and truck bodies over which finishes of acrylic lacquers, acrylic enamels, acrylic dispersion lacquers or enamels and acrylic powders can be applied.

3,835,077

POLYURETHANE-TAR COMPOSITION

Kenjiro Mori, Takarazuka, Yasuzi Takemoto, Sakai, and Shigueaqui Ikebe, Toyonaka, Japan, assignors to Sumitomo Chemical Company, Limited

No Drawing. Filed Oct. 4, 1972, Ser. No. 294,947
Int. Cl. C08g 51/52
U.S. Cl. 260—28 8 Claims

A composition containing a urethane prepolymer, a hardener and cresol tar which is the distillation residue having a boiling point of not lower than 200° C. in the preparation of cresols using cymene, the composition being useful as a water-proof material for building materials.

3,835,078

METHOD OF REMOVING FLOOR POLISH COMPRISING COPOLYMER CONTAINING α,β-ETHYLENICALLY UNSATURATED CARBOXYLIC ACID AND POLYVALENT METAL COMPOUND

Richard E. Zdanowski, Fort Washington, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

No Drawing. Continuation-in-part of application Ser. No. 640,852, May 24, 1967, which is a division of application Ser. No. 532,897, Mar. 9, 1966, now Patent No. 3,328,325, which in turn is a continuation-in-part of abandoned applications Ser. No. 238,007 and Ser. No. 238,008, both Nov. 15, 1962. This application Oct. 1, 1971, Ser. No. 185,821
The portion of the term of the patent subsequent to Mar. 7, 1984, has been disclaimed
Int. Cl. C08f 29/12, 29/36, 45/52
U.S. Cl. 260—28.5 A 8 Claims

This invention is concerned with the removal of a floor polish film deposited on a floor from an aqueous dispersion having a pH of about 7 to 11, and containing water,

a wax, a water insoluble addition polymer obtained by the emulsion polymerization of monoethylenically unsaturated monomers, including an α,β-ethylenically unsaturated carboxylic acid, and a dispersing agent in a proportion from 0.5 to 20% by weight, based on the total weight of polymer and wax, any content of a member selected from the group consisting of wax-soluble resins and gums and alkali-soluble resins being not over 50% by weight, based on the weight of the polymer, any alkali-soluble resin, if present, preferably being selected from the group consisting of shellac, Manila gum, Loba gum, and alkali-soluble alkyds or polyesters, the proportions of polymer and wax being about 10 to 95 parts by weight of the polymer to 5 to 90 parts by weight of the wax. The composition also contains (1) about 1% to 50% by weight, based on the weight of the polymer, of a polyvalent metal compound dissociable in the composition to form polyvalent metal-containing ions, and (2) from 0 to 100% by weight, based on the weight of organic film-forming material, of a pigment or filler, the total solids of the composition being from about 8% to 45% by weight. It also concerns a method of coating substrates therewith and of removing the coating from the substrates; also the coated substrates. The invention is particularly concerned with the removal of such coating films with alkaline removing compositions, particularly those containing aqueous ammonia, by applying the cleaning solution to the film coating, and removing the coating from the substrate.

3,835,079

HOT MELT COMPOSITIONS COMPRISING STYRENE-ISOBUTYLENE COPOLYMER, WAX, AND A PRIMARY RESIN

Frank Scardiglia, Arlington Heights, and Takeo Hokama, Chicago, Ill., assignors to Velsicol Chemical Corporation, Chicago, Ill.

No Drawing. Application Oct. 29, 1970, Ser. No. 85,297, now Patent No. 3,757,000, which is a continuation-in-part of abandoned application Ser. No. 728,332, May 10, 1968. Divided and this application Jan. 22, 1973, Ser. No. 325,500

Int. Cl. C08f *45/52*

U.S. Cl. 260—28.5 A **13 Claims**

A solid, homogeneous and essentially random copolymer of styrene and isobutylene having a number average molecular weight of from about 1000 to about 4000, a heterogeneity index of from about 1.50 to about 2.25 and a styrene content of from about 40 to about 90 weight percent with its higher molecular weight fractions having a higher styrene content than the average styrene content of the copolymer.

3,835,080

PROCESS FOR THE PREPARATION OF AQUEOUS POLYOXYMETHYLENE DISPERSIONS

Karlheinz Burg, Langenhain, Taunus, Hans Dieter Hermann, Neuenhain, Taunus, and Helmut Schlaf, Kelkheim, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed May 3, 1972, Ser. No. 250,073

Claims priority, application Germany, May 4, 1971, P 21 21 887.1

Int. Cl. B29c *1/04;* **C08g** *1/14, 1/22;* **D06m** *15/30*

U.S. Cl. 260—29.2 R **2 Claims**

Polyoxymethylenes are dispersed in water by suspending polyoxymethylene particles in water and then comminuting the particles of the suspension, the polyoxymethylene thus being directly dispersed. For the direct dispersion there are used polyoxymethylenes having hydrophilic groups, for example, carboxylate groups. Aqueous polyoxymethylene dispersions thus prepared are suitable for the preparation of coatings, in particular for paper and textiles.

3,835,081

TEXTILE ADHESIVE FROM POLYURETHANE

Kenneth H. Remley, Warren Township, Somerset, N.J., assignor to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed July 26, 1972, Ser. No. 275,392

Int. Cl. B32b *7/14, 23/08, 27/40;* **C08g** *22/16*

U.S. Cl. 260—29.2 TN **6 Claims**

Polyurethane textile adhesive compositions which furnish films of superior wet strength are obtained by forming an isocyanate prepolymer by reacting polypropylene glycol, 2,2-bis(hydroxymethyl)propionic acid and tolylene diisocyanate wherein the diisocyanate to total glycol molar ratio is between 1.6:1 and 1.8:1 and the reaction is terminated before completion of the reaction, i.e., the reaction is terminated when the unreacted isocyanate ("free NCO") content of the reaction mixture is reduced to from 6.19 to 7.4%.

3,835,082

AQUEOUS ALKALINE SOLUTION OF AN ALDEHYDE CONJOINT CONDENSATE OF RESORCINOL AND SATURATED RESORCINOL POLYMER

Robert Lee Wright, Akron, Ohio, assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Continuation-in-part of application Ser. No. 159,453, July 2, 1971, which is a continuation-in-part of application Ser. No. 59,720, July 30, 1970, both now abandoned. This application Jan. 26, 1972, Ser. No. 221,027

Int. Cl. C08g *51/24*

U.S. Cl. 260—29.3 **31 Claims**

Aqueous alkaline solutions of an aldehyde conjoint condensate of a mixture of resorcinol and a saturated resorcinol polymer which are adhesives or adhesive adjuvants for bonding fiber to rubber. The resorcinol polymer comprising alkylene bridged resorcinol units resulting from introducing olefinic unsaturated radicals of 3–10 carbon atoms into the nucleus of the resorcinol. Aqueous compositions containing the condensate and rubber latex are also disclosed.

3,835,083

MELAMINE-FORMALDEHYDE RESIN SOLUTIONS

Arie Tinkelenberg, Sittard, Netherlands, assignor to Stamicarbon B.V., Heerlen, Netherlands

No Drawing. Filed Feb. 5, 1973, Ser. No. 329,333

Claims priority, application Netherlands, Feb. 5, 1972, 7201532; July 28, 1972, 7210402

Int. Cl. C08g *9/30, 51/24*

U.S. Cl. 260—29.4 R **18 Claims**

A process for preparing stable melamine-formaldehyde resin solutions having improved properties is disclosed, wherein an aqueous solution of a water-soluble silicate if present before, during or after the condensation reaction of the melamine and formaldehyde.

The resulting resin solutions are suitable for a variety of end uses wherein melamine-formaldehyde resins have been previously used, including the impregnation of paper to be used in laminates.

3,835,084

POLY-N-VINYL LACTAM-POLYETHYLENEIMINE FLOCCULATING COMPOSITION

Julian L. Azorlosa, Bakersfield, Calif., and Earl P. Williams, Pen Argyl, Pa., assignors to GAF Corporation, New York, N.Y.

Continuation-in-part of abandoned application Ser. No. 834,797, June 19, 1969. This application Mar. 30, 1972, Ser. No. 239,531

Int. Cl. C08f *45/24*
U.S. Cl. 260—29.6 NR 15 Claims

Solids dispersed or suspended in aqueous systems are flocculated or precipitated by adding to said system a flocculating amount of a blend, either in dry form or in an aqueous solution, containing a polymeric mixture of from 2 to 4 parts by weight of a polyvinyl lactam, e.g. polyvinyl pyrrolidone, having a K-value of about 80 to 140, and 1 part by weight of polyethylene imine having a viscosity of about 20 to 5,000 centipoises.

3,835,085

PHOTOCURABLE RAPID DRYING WATER BASE PAINT MADE FROM A POLYENE-POLYTHIOL SYSTEM

Joseph Francis Wrzesinski, Baltimore, Md., assignor to W. R. Grace & Co.

No Drawing. Filed July 31, 1972, Ser. No. 276,286

Int. Cl. C08d *1/00*; C08f *1/00*
U.S. Cl. 204—159.23 7 Claims

A water based paint useful for protecting and decorating surfaces which can be dried within about 1–30 minutes after being applied to a surface to produce a flat, smooth, gloss, or semigloss finish. This paint can be applied to metal or wooden surfaces as a single finishing coat without first applying a primer coat.

3,835,086

POLYMERIC DISPERSIONS OF PRESSURE-SENSITIVE ADHESIVES AND PROCESS

Eduard Bergmeister, Peter Ludwig, Hubert Wiest, and Klaus Hafener, Burghausen, Germany, assignors to Wacker-Chemie G.m.b.H., Munich, Germany

No Drawing. Filed June 13, 1972, Ser. No. 262,327

Claims priority, application Germany, Aug. 13, 1971, P 21 40 721.6

Int. Cl. C08f *45/28*, *47/20*; C09j *3/14*
U.S. Cl. 260—33.6 UA 6 Claims

A polymeric dispersion of a pressure-sensitive adhesive consisting essentially of (A) from 30% to 80% by weight of saturated hydrocarbons boiling between 40° C. and 250° C. with up to 20% by volume of aromatic hydrocarbons and (B) from 20% to 70% by weight of a polymer dispersed therein having a polymeric content based on the monomers consisting essentially of (1) from 40% to 70% by weight, based on the dried weight of said polymer, of vinyl acetate, (2) from 10% to 50% by weight, based on the dried weight of said polymer, of ethylene, (3) from 0.1% to 5% by weight, based on the dried weight of said polymer, of a monomer having at least two olefinic double bonds and from 5 to 20 carbon atoms, and (4) from 0 to 40% by weight, based on the dried weight of said polymer, of a monomer having one olefinic double bond selected from the group consisting of acrylic acid esters of alkanols having 3 to 18 carbon atoms, and vinyl esters of alkanoic acids having 3 to 18 carbon atoms; as well as the process of preparation and the use of the same in preparing pressure-sensitive adhesive coatings.

3,835,087

REFLEX-REFLECTING COMPOSITIONS CONTAINING GLASS BEADS AND NON-METALLIC FLAKE PIGMENTS

Charles E. Searight, Steven H. Brasfield, Sr., and Thomas E. McCraney, Jackson, Miss., assignors to Ferro Corp., Cleveland, Ohio

No Drawing. Continuation of abandoned application Ser. No. 138,831, Apr. 29, 1971. This application Dec. 1, 1972, Ser. No. 311,095

Int. Cl. C08g *51/28*
U.S. Cl. 260—33.6 R 6 Claims

Coating compositions which provide reflex-reflecting properties comprising (a) a binding vehicle, (b) transparent glass beads and (c) non-metallic flake pigment particles having a reflective mirror-like finish.

3,835,088

MgO-CONTAINING RESIN COMPOSITION AS THICKENING AGENT

Youichi Takamiya, Saitama, Kiichiro Sasaguri, Tokyo, Hiroshi Sano and Katsumi Okina, Fukushima, and Sunao Kawachi, Saitama, Japan, assignors to Shin Nihon Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Jan. 18, 1973, Ser. No. 324,707

Claims priority, application Japan, Jan. 18, 1972, 47/6,645

Int. Cl. C08f *45/28*; C08g *51/28*
U.S. Cl. 260—33.6 UA 14 Claims

A slurry-like, dope-like, or paste-like resin composition for increasing the viscosity of unsaturated polyester resins showing improved thickening properties comprising (a) magnesium oxide having an iodine number of 10–50 mg./g. and/or magnesium hydroxide having an iodine number of 5–50 mg./g., (b) a liquid monomer having polymerizable double bonds, and (c) a thermoplastic addition polymer soluble in the above monomer or (d) a thermoplastic condensation polymer soluble in the above monomer.

3,835,089

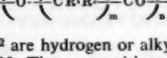
POLYLACTONE-MODIFIED LINEAR POLYESTERS AND MOLDING COMPOSITIONS CONTAINING THE SAME

Daniel W. Fox and Allen D. Wambach, Pittsfield, Mass., assignors to General Electric Company

No Drawing. Filed June 23, 1972, Ser. No. 265,672

Int. Cl. C08g *51/04*
U.S. Cl. 260—40 R 31 Claims

Thermoplastic compositions comprising (a) a poly(1, 4-butylene terephthalate) resin and (b) a linear aliphatic polyester resin of the general formula



wherein R^1 and R^2 are hydrogen or alkyl, m is 2–5 and n is from 25 to 1500. The composition of resins (a) and (b) can be reinforced with fillers and/or rendered flame retardant.

3,835,090

DENTAL RESTORATIVE CEMENT COMPOSITIONS

Robert Johns Gander, Whitehouse, and Richard McCrea Potts, East Brunswick, N.J., assignors to Johnson & Johnson

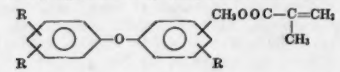
No Drawing. Filed Feb. 3, 1972, Ser. No. 223,284

Int. Cl. A61k *5/02*; C08g *51/04*
U.S. Cl. 260—42.15 25 Claims

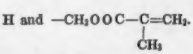
Improved dental restorative cements are prepared by utilizing as a binder for inorganic filler materials, such as

silane-treated crystalline quartz, either alone or together with other monomers, trimethacrylate and triacrylate esters of the aliphatic triols glycerol, trimethylolethane, trimethylolpropane, and trimethylolbutane.

The preferred restorative cements with respect to appearance are obtained by using finely divided crystalline quartz as a filler and a binder resin having an index of refraction in the range of 1.525 to 1.565. Binder resins having refractive indexes within this range can be obtained by including in the monomer mix together with the aliphatic triol at least one monomer of the gorup consisting of 1,3 - bis[2,3 - di(methacryloxy)-propoxy]-benzene (RGTMA), 2,2 - bis[4 - (3 - methacryloxy - 2-hydroxypropoxy)-phenyl]-propane (BIS-GMA), 1,3-bis(3-methacryloxy - 2-hydroxypropoxy)-benzene (RGDMA), 2,2-bis[4 - (2 - methacryloxyethoxy)-phenyl]-propane (SR–348), di(2 - methacryloxyethyl) diphenyl silane, di(2-methacryloxy-methylethoxy) diphenyl silane, and methacrylate ester (CMDPO–25 Methacrylate) in which a methacryloxy group or groups are attached to diphenyl oxide nuclei through single methylene bridges, the monomers being represented by the general formula:



where R in each instance is at least one of the group consisting of



3,835,091

FLAME RESISTANT REINFORCED POLYOLEFIN MIXTURE

Gunther Roos, Kelkheim, Taunus, Robert Kaussen, Kriftel, and Ulrich van Spankeren, Hofheim, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Mar. 1, 1973, Ser. No. 336,903

Claims priority, application Germany, Mar. 7, 1972, P 22 10 914.4

Int. Cl. C08f *45/04, 45/58*

U.S. Cl. 260—42.45 **4 Claims**

Flame resistant, reinforced polyolefin mixtures containing, in addition to polyolefin, talcum, antimony trioxide and tetrabromophthalic anhydride or an addition product of 3 moles of hexachloro-cyclopentadiene per mole of tris-acryloyl-perhydrotriazine.

3,835,092

POLYURETHANE PLASTIC COMPOSITIONS CONTAINING FLAME RETARDANTS

Arnold L. Anderson, Alma, Mich., assignor to Michigan Chemical Corporation, St. Louis, Mich.

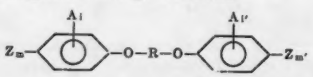
No Drawing. Continuation-in-part of abandoned application Ser. No. 260,240, June 6, 1972. This application Feb. 8, 1973, Ser. No. 330,787

The portion of the term of the patent subsequent to May 14, 1991, has been disclaimed

Int. Cl. C08g *51/60*

U.S. Cl. 260—45.9 R **14 Claims**

Plastic compositions containing polyurethanes and bisphenoxy compounds having the formula



wherein Z is bromine or chlorine, m and m' are integers having a value of 1–5, i and i' are integers having a value of 0–2, R is herein defined and A is cyano, nitro, lower alkoxy, lower alkyl, fluorine, dialkylamino, phenyl, halo-phenyl, benzyl or halo-benzyl.

3,835,093

POLYSTYRENE PLASTIC COMPOSITIONS CONTAINING HALOGENATED ARYL FLAME RETARDANTS

Arnold L. Anderson, Alma, Mich., assignor to Michigan Chemical Corporation, St. Louis, Mich.

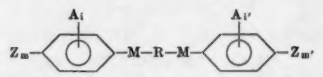
No Drawing. Continuation-in-part of abandoned application Ser. No. 260,240, June 6, 1972. This application Feb. 8, 1973, Ser. No. 330,821

The portion of the term of the patent subsequent to July 16, 1991, has been disclaimed

Int. Cl. C08f *45/60*

U.S. Cl. 260—45.9 R **29 Claims**

Plastic compositions containing polystyrenes and halogenated aryl compounds having the formula



wherein Z is bromine or chlorine, m and m' are integers having a value of 1–5, i and i' are integers having a value of 0–2, R is herein defined, M and M′ are each independent and are from the group oxygen, nitrogen or sulfur with the proviso that M and M′ cannot concurrently be oxygen in both cases, and A is chlorine, cyano, nitro, lower alkoxy, lower alkyl, fluorine, dialkylamino, phenyl, halophenyl, benzyl, or halo-benzyl.

3,835,094

POLYOLEFIN PLASTIC COMPOSITIONS CONTAINING BIS-PHENOXY FLAME RETARDANT

Arnold L. Anderson, Alma, Mich., assignor to Michigan Chemical Corporation, St. Louis, Mich.

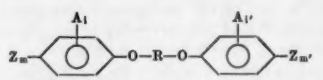
No Drawing. Continuation-in-part of abandoned application Ser. No. 260,240, June 6, 1972. This application Feb. 8, 1973, Ser. No. 330,826

The portion of the term of the patent subsequent to May 14, 1991, has been disclaimed

Int. Cl. C08f *45/60*

U.S. Cl. 260—45.9 R **14 Claims**

Plastic compositions containing polyolefins and bisphenoxy compounds having the formula



wherein Z is bromine or chlorine, m and m' are integers having a value of 1–5, i and i' are integers having a value of 0–2, R is herein defined and A is cyano, nitro, lower alkoxy, lower alkyl, fluorine, dialkylamino, phenyl, halophenyl, benzyl or halo-benzyl.

3,835,095

STABILIZATION OF ORGANIC SUBSTANCES THAT ARE LIABLE TO PEROXIDIC DECOMPOSITION

Cornelis R. H. I. de Jonge, De Steege, William J. Mijs, Rozendaal, and Hendrik J. Hageman, Dieren, Netherlands, assignors to Akzo N.V., Arnhem, Netherlands

No Drawing. Filed Feb. 7, 1972, Ser. No. 224,287

Claims priority, application Netherlands, Feb. 15, 1971, 7102009

Int. Cl. C08f *45/58*

U.S. Cl. 260—45.85 S 9 Claims

An improvement in the stabilization of organic substances that are liable to peroxidic decomposition wherein a 2,4,6-trisubstituted phenol is used as the stabilizer. The stabilizer is an o-phenylphenol which has a substituted or non-substituted alkyl-, aralkyl-, alkoxy- or aralkoxy group in the p-position or is in this position bonded to a like radical by means of an alkylidene group, an alkylidene dioxy group or a sulfur atom and has an isopropyl, tert.-butyl, cyclohexyl or phenyl group in the other o-position or is in this position bonded by an alkylidene group or a sulfur atom to a like radical to form a 2,2'-alkylidene bis (6-phenylphenol) or a 2,2'-thiobis(6-phenylphenol).

3,835,096

LIGHT DEGRADABLE THERMOPLASTIC MOLDING COMPOSITION BASED ON POLYACETALS

Harald Cherdron, Naurod, Taunus, Edgar Fischer, Frankfurt am Main, and Karl Friedrich Müek, Wiesbaden, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Sept. 14, 1972, Ser. No. 289,182

Claims priority, application Germany, Sept. 16, 1971, P 21 46 374.1

Int. Cl. C08g *1/02*

U.S. Cl. 260—67 FP 7 Claims

Polyacetals, i.e. homopolymers of formaldehyde or of trioxane or copolymers of trioxane with monofunctionally reacting compounds such as cyclic ethers or cyclic acetals and possibly polyfunctionally reacting compounds can be protected by addition of stabilizers against the action of heat and oxygen. They can, however, be degraded by the action of ultra-violet light if they contain light sensitizers, for example anthrone. The polyacetals are suitable for the manufacture of shaped articles, especially sheets.

3,835,097

LIGHT DEGRADABLE THERMOPLASTIC MOLDING COMPOSITION BASED ON POLYACETALS

Edgar Fischer, Frankfurt am Main, and Karl Friedrich Muck, Wiesbaden, Germany (both % Farbwerke Hoechst A.G., Frankfurt am Main, Germany)

No Drawing. Filed Sept. 14, 1972, Ser. No. 289,183

Claims priority, application Germany, Dec. 4, 1971, P 21 60 223.3

Int. Cl. C08f *1/02*

U.S. Cl. 260—67 FP 4 Claims

Polyacetals, i.e. homopolymers of formaldehyde or of trioxane or copolymers of trioxane with monofunctionally reacting compounds such as cyclic ethers or cyclic acetals and possibly polyfunctionally reacting compounds can be protected by addition of stabilizers against the action of heat and oxygen. They can, however, be degraded by the action of ultra-violet light if they contain light sensitizers. The polyacetals are suitable for the manufacture of packing material, especially sheets.

3,835,098

PROCESS FOR IMPROVING THERMOPLASTIC ELASTOMERIC COMPOSITIONS

Morton Brown, Guenther Kurt Hoeschele, and William Kenneth Witsiepe, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of abandoned application Ser. No. 120,376, Mar. 2, 1971. This application Mar. 1, 1973, Ser. No. 337,014

Claims priority, application Canada, Dec. 9, 1971, 129,803

Int. Cl. C08g *17/14, 23/20*

U.S. Cl. 260—75 N 12 Claims

A process for preparing a thermoplastic elastomeric copolyester composition having improved elastomeric, physical and stability properties which comprises comingling and reacting an effective amount of at least one polycarbodiimide selected from substantially linear polycarbodiimides having an average of at least two carbodiimide groups per molecule with at least one elastomeric segmented copolyester polymer comprising (1) 5–90 weight percent long chain ester units derived from at least one long chain glycol having a molecular weight of about 400–6000 and at least one low molecular weight dicarboxylic acid having a molecular weight less than about 300, and (2) 10–95 weight percent short chain ester units derived from at least one low molecular weight diol having a molecular weight of less than about 250 and at least one low molecular weight dicarboxylic acid having a molecular weight of less than about 300.

3,835,099

PHOSPHOROUS ACID AND ESTER CATALYZED FORMATION OF AMINEDIOL MODIFIED POLYESTERS

Hideaki Munakata, Kazuo Watanabe, Yoshikazu Arimatsu, and Masakazu Tanaka, Otsu, Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka-shi, Osaka-fu, Japan

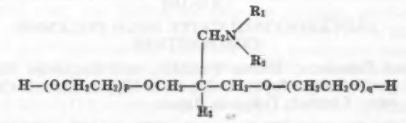
No Drawing. Continuation of abandoned application Ser. No. 140,269, May 4, 1971. This application July 5, 1973, Ser. No. 376,715

Claims priority, application Japan, May 26, 1970, 45/45,378

Int. Cl. C08g *17/013*

U.S. Cl. 260—75 N 6 Claims

In the production of a polyester improved in dyeability with acid dyes by the reaction between a carboxylic acid and a glycol of which the whole or part is the one represented by the formula:



wherein R_1 and R_2 are each a lower alkyl group or, when taken together, they represent a lower alkylene group, R_3 is a lower alkyl group or a group of the formula:

in which R_1 and R_2 are each as defined above and p and q are each zero or a positive integer not more than 10, an improved process which is characterized in that the reaction is carried out in the presence of at least one of phosphorous acid compounds and hypophosphorous acid, whereby (1) the rate of polymerization is elevated, (2) the sublimation of the starting carboxylic acid is prevented, (3) the molecular weight of the polyester is increased and (4) the polyester obtained is colorless and transparent.

3,835,100

METHOD FOR ANIONIC POLYMERIZATION OF ALPHA-PYRROLIDONE OR ALPHA-PIPERIDONE WITH QUATERNARY AMMONIUM SALTS

Hikaru Sekiguchi, Panayota Rapacoulia, and Bernard Coutin, Paris, France, assignors to Agence Nationale de Valorisation de la Recherche (Anvar), Courbevoie, France

No Drawing. Filed Feb. 14, 1972, Ser. No. 226,314

Int. Cl. C08g *20/18*

U.S. Cl. 260—78 P **9 Claims**

The invention proposes new catalysts consisting of quaternary ammonium salts of lactams or other organic compounds having one or more hydrogen atoms of acidic nature and having pK values ranging from about 14 to about 30, which catalysts are obtained by reacting quaternary ammonium alkoxides with corresponding lactams or weak acids, as well as a new process for polymerizing omega-lactams, in particular alpha-pyrrolidone and alpha-piperidone, in presence of the above catalysts.

3,835,101

MELT BLENDS OF CARBOXYLIC ACID TERMINATED, LOW MOLECULAR WEIGHT POLYAMIDE AND POLYVALENT METAL COMPOUNDS

Hendrikus J. Oswald, Morristown, and Krishnan Thiruvillakkat, East Orange, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed Apr. 13, 1972, Ser. No. 243,861

Int. Cl. C08g *20/38*

U.S. Cl. 260—78 SC **11 Claims**

Process for obtaining a melt shapable polyamide having substantially increased solution and melt viscosities by melt reacting an essentially non-melt-shapable, low molecular weight polyamide with suitable polyvalent metal compounds capable of reacting with at least about 80 percent of the acid groups of the polymer.

3,835,102

ELECTROCONDUCTIVE HIGH POLYMER COMPOSITION

Isao Shinohara, Eishun Tsuchida, and Katsuhiro Mizoguchi, Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo-to, Japan

No Drawing. Filed Aug. 2, 1972, Ser. No. 277,177

Claims priority, application Japan, Aug. 4, 1971, 46/58,256

Int. Cl. C08f *27/04, 27/08*

U.S. Cl. 260—78.4 N **28 Claims**

A high polymer composition comprising a salt constituted from an integral type of polycationic polymer containing in its principal repeating unit quaternized nitrogen atoms and aromatic groups, an anion radical of a tetracyano compound and a neutral tetracyano compound in appropriate amounts such that the electroconductivity is greater than 10^{-5} mho/cm. For practical uses, it has very excellent chemical, physical and electrical properties.

3,835,103

FLAME-RETARDANT POLYMERS

Gedaleia Waldner, Rechovot, and Jacob Alter, Tel-Aviv, Israel, assignors to Atomic Energy Commission of the State of Israel, Tel-Aviv, Israel

No Drawing. Filed Jan. 19, 1973, Ser. No. 325,006

Claims priority, application Israel, Jan. 21, 1972, 38,610

Int. Cl. C08f *19/18*

U.S. Cl. 260—80.6 **1 Claim**

Flame-retardant polymers of 70–80% by weight styrene, 1–3% by weight vinylidene chloride or vinyl bromide and the balance of acrylonitrile.

3,835,104

CURABLE, AMORPHOUS, OLEFINIC TERPOLYMERS FROM ALPHAMONO OLEFINS AND POLYENES

Sebastiano Cesca, Sergio Arrighetti, and Walter Marconi, San Donato Milanese, Italy, assignors to Snam Progetti S.p.A., Milan, Italy

No Drawing. Original application Sept. 5, 1969, Ser. No. 855,771, now Patent No. 3,652,514. Divided and this application Mar. 20, 1972, Ser. No. 236,249

Claims priority, application Italy, Sept. 5, 1968, 20,868/68, Patent 843,706

The portion of the term of the patent subsequent to Mar. 28, 1989, has been disclaimed

Int. Cl. C08f *15/40*

U.S. Cl. 260—80.78 **10 Claims**

A curable amorphous olefinic terpolymer of two different alpha-olefins having up to 10 carbons atoms and a polycyclic polyene, such as 4,7 endomethylene-4, 7-dihydroindene, which contains an endomethylene group ortho-condensed with a hydrocarbon ring, the two carbon atoms common to two rings being part of a conjugated diene system the double bonds of which are in the ring other than that containing the endomethylene group, is disclosed.

3,835,105

METHOD FOR THE POLYMERIZATION OF VINYL CHLORIDE/VINYL ESTER COPOLYMERS AND THE HIGH BULK DENSITY COPOLYMERS OF THE PROCESS

Kurt Fendel and Johann Bauer, Burghausen, and F. Johannes Kohl, Munich, Germany, assignors to Wacker-Chemie GmbH, Munich, Germany

No Drawing. Filed Feb. 7, 1973, Ser. No. 330,315

Claims priority, application Germany, Feb. 11, 1972, P 22 06 593.6

Int. Cl. C08f *1/11, 1/60, 1/78*

U.S. Cl. 260—87.1 **10 Claims**

A method of suspension polymerization of vinyl chloride/vinyl ester copolymers comprising polymerizing a monomer mixture containing at least 50% of vinyl chloride in an aqueous suspension at a pH of under 7 in the presence of 0.001% to 3% by weight, based on the mono-

mers, of a monomer-soluble free-radical-forming polymerization catalyst, from 0.01% to 2% by weight based on the monomers, of water-soluble cellulose ethers as protective colloids, and from 2% to 20% by weight, based on the monomers, of an organic solvent having from 3 to 8 carbon atoms selected from the group consisting of alkyl alkanoates, alkanones and alkanediones and recovering a copolymer powder having a higher bulk density and improved flow properties.

3,835,106
METHOD OF CONTROLLING A POLYMER PREPARATION PROCESS

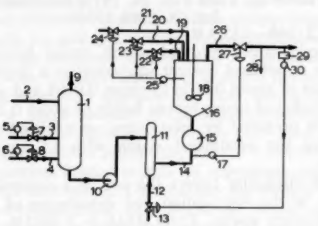
Dirk Klaassen and Luciano J. Spadon, Geleen, and Meindert Tiessens, Beek, Netherlands, assignors to Stamicarbon N.V., Geleen, Netherlands

Continuation of abandoned application Ser. No. 21,457, Mar. 20, 1970. This application Apr. 19, 1972, Ser. No. 245,584

Claims priority, application Netherlands, Mar. 20, 1969, 6904266

Int. Cl. C08f *3/02, 3/06, 1/80*

U.S. Cl. 260—94.9 P **7 Claims**



A method of process control for the continuous preparation of a polymer is described in which one or more monomers, hydrogen, and one or more catalysts are brought together in a reactor wherein a polymer of uniform properties is achieved by controlling the hydrogen feed in relation to the monomer to hydrogen ratio in the reactor effluent stream.

3,835,107
PRODUCTION OF LOW MOLECULAR WEIGHT WAXY POLYETHYLENES

Kurt Stark, Heidelberg, Hans Gropper, Ludwigshafen, and Friedrich Urban and Helmut Pfannmueller, Limburgerhof, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Continuation of abandoned application Ser. No. 79,300, Oct. 8, 1970. This application Sept. 25, 1972, Ser. No. 291,671

Int. Cl. C08f *1/60, 3/04*

U.S. Cl. 260—94.9 R **5 Claims**

A process for the production of waxy, low molecular weight polyethylenes in which ethylene is polymerized under the action of a polymerization initiator which forms free radicals and in the presence of a polymerization regulator at elevated temperature and at superatmospheric pressure. It is a characteristic of the process according to the invention that as the free radical-forming polymerization initiator there are jointly used:

(1) a specific amount of an organic peroxide having a half-life temperature of from 60° to 112° C.; and
(2) a specific amount of oxygen. High yields can be obtained by the process and a product can be obtained which has particularly good oil-binding properties.

3,835,108
PROCESS FOR PREPARING THE RELEASING HORMONE OF LUTEINIZING HORMONE (LH) AND OF FOLLICLE STIMULATING HORMONE (FSH), SALTS AND COMPOSITIONS THEREOF, AND INTERMEDIATES THEREFOR

Hans U. Immer and Verner R. Nelson, St. Laurent, Montreal, Quebec, and Manfred K. Götz, Hudson, Quebec, Canada, assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Filed Feb. 15, 1972, Ser. No. 226,508

Int. Cl. C07c *103/52*

U.S. Cl. 260—112.5 **41 Claims**

A process for preparing the LH- and FSH-releasing hormone of the formula I

H-Pyr-His-Trp-Ser-Tyr-Gly-Leu-Arg-Pro-Gly-NH_2

which comprises the following steps: Condensing N-(5-oxo-L-prolyl)-L-histidine hydrazide by means of the azide method with L-tryptophan benzyl ester and treating the resulting compound with hydrazine hydrate to obtain N-[N-(5-oxo-L-prolyl) - L-histidyl]-L-tryptophan hydrazide (II); treating N-[O-benzyl-N-carboxy-L-tyrosyl]glycine N-benzyl ester with ethyl chloroformate to obtain the corresponding mixed anhydride which is reacted with *t*-butyl carbazate to obtain the corresponding 2-carboxyhydrazide *t*-butyl ester which is hydrogenolyzed to N-L-tyrosylglycine 2-carboxyhydrazide *t*-butyl ester, and condensing the latter with N-carboxy-L-seryl N-benzyl ester 2,4-dinitrophenyl ester followed by hydrogenolysis of the reaction product to obtain N-(N-L-seryl-L-tyrosyl) glycine 2-carboxyhydrazide *t*-butyl ester (III); condensing N-carboxy-L-proline N-benzyl ester with glycine ethyl ester in the presence of dicyclohexylcarbodiimide, treating the resulting product with ammonia and then hydrogenolyzing, to obtain 2-[(L-prolyl)amino]acetamide, which is condensed with N-carboxy-N^G-nitro-L-arginine N-*t*-butyl ester in the presence of dicyclohexylcarbodiimide and N-hydroxysuccinimide to obtain N-[N-(N-carboxy-N^G-nitro-L-arginyl)-L-prolyl]glycinamide N-*t*-butyl-ester (IV); or alternatively condensing L-proline methyl ester with N-carboxy-N^G-nitro-arginine N-*t*-butyl ester in the presence of dicyclohexylcarbodiimide, condensing the resulting product with glycine ethyl ester in the presence of dicyclohexylcarbodiimide, and treating the resulting product with ammonia to obtain the same compound IV as above; treating said compound IV with acid and then with N-carboxy-L-leucine N-benzyl ester 2,4,5-trichlorophenyl ester and hydrogenolyzing the resulting product in acetic acid, to obtain N-[N-[N-(N-L-leucyl)-L-arginyl]-L-prolyl]glycinamide diacetate (V); condensing compound II with compound III by means of the azide method to obtain the hexapeptide N-[N-[N-[N-[N-(5-oxo-L-prolyl)-L-histidyl]-L-tryptophyl]-L - seryl]-L-tyrosyl]glycine 2-carboxyhydrazide *t*-butyl ester, or condensing N-[N-(5-oxo-L-prolyl)-L-histidyl]-L-tryptophan with compound III in the presence of dicyclohexylcarbodiimide to obtain the same hexapeptide as above, and deprotecting and converting the latter to its trifluoroacetate salt (VI); and condensing compound V with compound VI by means of the azide method, to obtain the decapeptide of formula I which is isolated as the salt and optionally converted to other pharmaceutically acceptable salts.

3,835,109
VINYLOXYCARBONYL GROUP AS AN AMINO PROTECTING GROUP IN THE SYNTHESES OF PEPTIDES

Roy A. Olofson and Yasushi Stephan Yamamoto, State College, Pa., assignors to Research Corporation, New York, N.Y.

No Drawing. Original application Aug. 21, 1969, Ser. No. 852,096, now Patent No. 3,711,458. Divided and this application Aug. 9, 1972, Ser. No. 279,247

Int. Cl. C07c *103/52;* **C07g** *7/00*

U.S. Cl. 260—112.5 **1 Claim**

Temporary blocking, in peptide synthesis, of a free amino group by acylating same and, after peptide condensation, splitting off the acyl group introduced, wherein the free amino group is acylated with a vinyloxycarbonyl group. The vinyloxycarbonyl group may be removed from a product peptide with bromine or another halogen followed by alcohol, with a mild acid or by mercuric ion induced hydrolysis.

3,835,110
VASOPRESSIN PEPTIDES HAVING PSYCHO-PHARMACOLOGICAL ACTIVITY

Hendrik Marie Greven, Heesch, and David de Wied, Bilthoven, Netherlands, assignors to Akzona Incorporated, Asheville, N.C.

No Drawing. Filed Jan. 29, 1973, Ser. No. 327,260

Claims priority, application Netherlands, Feb. 8, 1972, 7201604

Int. Cl. A61k *27/00;* **C07c** *103/52*

U.S. Cl. 260—112.5 **4 Claims**

The invention is dealing with psychopharmacologically active peptides of the formula:

H-L-Cys-L-Tyr-L-Phe-L-Glu(X)-L-Asp(X)-OH

in which X represents a hydroxy or amino group, or the dimers (via S—S bridge) formed from these pentapeptides by oxidation, as well as the functional derivatives thereof.

These substances can be used as anti-depressant agents and more particularly for the treatment of certain mental disorders, whereby a stimulation of the mental performance is desired, such as in certain types of neurosis and in old-age infirmities (senility).

3,835,111
SLOW-SET PECTIN AND PROCESS FOR PREPARING SAME

Robert M. Ehrlich, Sherman Oaks, and Raymond E. Cox, Laguna Beach, Calif., assignors to General Foods Corporation, White Plains, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 6,923, Jan. 29, 1970. This application Aug. 3, 1973, Ser. No. 385,389

Int. Cl. A23l *1/04;* **C08b** *19/02*

U.S. Cl. 260—209.5 **9 Claims**

An improved slow-set pectin is prepared by contacting pectin with an ammoniacal alcohol solution at low temperature. The pectin so obtained has less sensitivity to alkaline earth metal ions and has a setting temperature of about 120° F. or less.

3,835,112
HEPARIN ESTERS

Jean Mardiguian and Pierre Fournier, Paris, France, assignors to Societe a Responsabilite Limitee dite: Societe d'Etude et d'Exploitation de Marques Mar-Pha, Paris, France

Filed June 7, 1971, Ser. No. 150,293

Claims priority, application Great Britain, June 8, 1970, 27,687/70

Int. Cl. C08b *19/03*

U.S. Cl. 260—211 R **10 Claims**

Partial hydrolysable esters of heparin and an organic, non-toxic, physiologically tolerated acid. Said esters can be used, *inter alia,* as anti-coagulants having a delayed effect, hypo-lipemic agents, and hypocholesterolemic agents.

3,835,113
PREPARATION OF VISCOSE

Noel I. Burke and Harold R. Coleman, Danville, Ill., assignors to Tee-Pak, Inc., Chicago, Ill.

No Drawing. Filed Dec. 26, 1972, Ser. No. 318,065

Int. Cl. C08b *9/00*

U.S. Cl. 260—216 **5 Claims**

An improvement in a process for preparing cellulose xanthate comprises reacting alkali cellulose crumb at a temperature of from 25–35° C. for a period of time from 40–75 minutes and at an initial reactor pressure from about 100–700 mm. mercury absolute with a mixture of carbon disulfide and carbonyl sulfide, the proportion of carbonyl sulfide being from 2.5–10 mole percent for the mixture and a total mole proportion of from 1–1.5 moles per kilogram of alkali cellulose crumb. The cellulose xanthate can be produced in substantially less time than conventional processes and the resulting viscose has a much lower viscosity than conventional viscose.

3,835,114
OXIDIZED CATIONIC STARCH

Walter G. Hunt, Bridgeton, and Ray J. Belz, Mehlville, Mo., assignors to Anheuser-Busch, Incorporated, St. Louis, Mo.

No Drawing. Filed Feb. 26, 1973, Ser. No. 335,518

Int. Cl. C08b *19/06*

U.S. Cl. 260—233.3 R **6 Claims**

A gelatinized, oxidized starch amine butene halide, having a carboxyl content equivalent to a degree of substitution of about 0.0036 to about 0.0108 and a degree of substitution of amine butene halide of about 0.15 to about 0.25, is prepared by gelatinizing an oxidized starch and reacting the gelatinized starch with an amine butene halide.

This disclosure covers the use of a cationic oxidized starch in the flocculation and dewatering of municipal raw primary sludge. From 0.016 to 0.1895% (based on the dry weight of the sludge) of the treated starch of 35 to 60 fluidity and 1.75 to 2.25% oxidation is added to the municipal sludge and contacted with the sewage for a period of 3 to 5 minutes before being dewatered to a moisture content below about 70% moisture, which is the moisture level at which the solids will adequately sustain combustion. The starch has from 0.15 to 0.25 degree substitution of an amine butene halide, specifically, 1-chloro-4-butenyl-trimethylammonium chloride.

3,835,115
α-(SUBSTITUTED SULFONAMIDO)ARYL-METHYLPENICILLINS

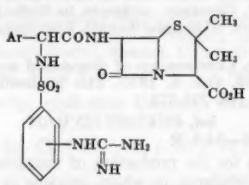
Kenneth Richardson, North Stonington, Conn., assignor to Pfizer Inc., New York, N.Y.

No Drawing. Filed July 17, 1972, Ser. No. 272,171

Int. Cl. C07d *99/16*

U.S. Cl. 260—239.1 **7 Claims**

Compounds of the formula:



or the pharmaceutically acceptable basic salts thereof, wherein Ar is phenyl, 4-hydroxyphenyl or thienyl as antimicrobial agents.

3,835,116

VINYL HALIDE PLASTISOL COMPOSITIONS CONTAINING A CARBOXYLIC POLYMER

Leslie B. Lydick, Lorain, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

Filed June 25, 1973, Ser. No. 373,093
Int. Cl. C08b 25/00; C08f 29/24, 29/50, 45/40
U.S. Cl. 260—17.4 SG 18 Claims

There is disclosed new compositions comprising a vinyl halide plastisol, free of water, having incorporated therein a carboxylic polymer, and a suitable neutralizing agent, said polymer being one obtained by copolymerizing a carboxylic monomer, such as acrylic acid, with certain proportions of a polyalkenyl polyether of a polyhydric alcohol containing more than one alkenyl ether grouping per molecule, the parent polyhydric alcohol containing at least four carbon atoms and at least three hydroxyl groups. These compositions have a high yield and little or no dilatancy. The process for making such compositions is likewise covered.

3,835,117

RUBBERIZED COAL TAR PITCH EMULSION

John P. Walaschek, Fort Lauderdale, Fla., assignor to Walaschek and Associates, Incorporated, Fort Lauderdale, Fla.

Filed Mar. 5, 1973, Ser. No. 337,930
Int. Cl. C08f 45/52
U.S. Cl. 260—28.5 AS 4 Claims

Improved rubberized coal tar emulsion compositions especially suitable for sealing bituminous pavement compositions, such as asphalt pavement compositions. A composition according to the invention comprises a major portion of a prepared coal tar pitch emulsion and water, having admixed therewith a small amount of an acrylonitrile/butadiene copolymer latex having an extraordinarily small particle size. Preferred compositions additionally include a silicone resin. The compositions further include an appropriate aggregate filler material such as sand. Compositions according to the invention are characterized by a thixotropic nature and the ability to maintain an aggregate in matrix like suspension. A film cast from such compositions applied as a sealing coat to an asphalt pavement is characterized by long life, uniform filler distribution, and excellent bonding characteristics.

3,835,118

SPONGE IRON FRICTION MATERIAL

Seong Kwan Rhee, Southfield, Mich., and John P. Kwolek, Troy, N.Y., assignors to The Bendix Corporation, South Bend, Ind.

Filed May 14, 1973, Ser. No. 360,255
Int. Cl. C08g 51/08
U.S. Cl. 260—38 7 Claims

A semi-metallic friction material for use in a vehicle brake as a friction lining or pad. The semi-metallic friction material utilizes the abrasive surface produced in coarse sponge iron to provide a high coefficient of friction and good wear resistance up to 250°F to compliment the coefficient of friction and wear resistance capable of being produced by the interaction of metallic and ceramic powders, steel fibers, rubber particles and graphite above 250°F.

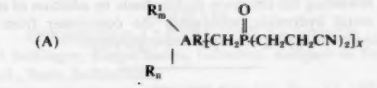
3,835,119

POLY (PHOSPHINE OXIDE DERIVATIVE) WITH AMMONIUM POLYPHOSPHATE AS A FLAME RETARDANT COMPOSITION FOR POLYMERS

Joseph Adrian Hoffman, Somerville, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed June 28, 1973, Ser. No. 374,728
Int. Cl. C08g 45/56, 51/60; C09k 3/28
U.S. Cl. 260—45.75 R 16 Claims

Flame-retardant compositions comprising (a) a poly (phosphine oxide derivative) having the formula

(A) 

wherein R and R¹ are individually, methyl, ethyl or methoxy radicals, AR is benzene, napthalene or anthracene and when AR is benzene, *n* and *m* are individually whole integers of 0–2, inclusive, *x* is a whole integer of 2–6, inclusive and R and R¹ can combine to form a saturated, six-membered hydrocarbon ring in conjunction with two adjacent carbon atoms of the benzene ring, when AR is napthalene, *n* and *m* are individually, whole integers of 0–3, inclusive, and *x* is a whole integer of 2–4, and when AR is anthracene, *n* and *m* are, individually, whole integers of 0–4, inclusive, and *x* is a whole integer of 2–6, inclusive, and (b) ammonium polyphosphate and flame-retardant polymers containing the same, are disclosed.

3,835,120

POLYIMIDES OF CONJUGATED AZO DIAMINES

Hartwig C. Bach, and Helmut E. Hinderer, both of Pensacola, Fla., assignors to Monsanto Company, St. Louis, Mo.

Continuation of Ser. No. 779,244, Nov. 26, 1968, abandoned. This application Oct. 15, 1973, Ser. No. 406,449
Int. Cl. C08g 20/32
U.S. Cl. 260—47 CP 7 Claims

A class of ordered fiber and film forming aromatic polyamide acids and corresponding polyimides derived from symmetrical conjugated and pseudo-conjugated aromatic azo diamines have been found to possess excellent thermal, mechanical and electrical properties useful in fibers, films and other shaped articles.

3,835,121

THEIC-HYDANTOIN-ESTER RESINS FOR WIRE COATINGS

Jerome A. Preston, Angola, Ind., assignor to Essex International Inc., Fort Wayne, Ind.

Continuation-in-part of Ser. No. 275,922, July 18, 1972, Pat. No. 3,779,991, which is a continuation-in-part of Ser. No. 58,173, July 24, 1970, Pat. No. 3,681,282. This application Oct. 3, 1973, Ser. No. 402,977
Int. Cl. C08g 22/08
U.S. Cl. 260—77.5 NC 10 Claims

Resin composition useful as a wire coating comprising the reaction product of a reactive hydantoin based compound, a polycarboxylic acid, and tris (2-hydroxyethyl) isocyanurate. The resin provides a low cost, cured enamel for electrical conductors. Preferably, the resin composition includes another polyhydric alcohol such as ethylene glycol to impart flexibility.

3,835,122

NOVEL POLYSTYRENE PRODUCT HAVING RAPID-POST-IRRADIATION DECAY OF CONDUCTIVITY AND PROCESS OF MAKING SAME

William W. Parkinson, Jr., Kingston; Minton J. Kelly, Oak Ridge; Bernard J. Sturm, Oak Ridge, and William J. Martin, Oak Ridge, all of Tenn., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Apr. 25, 1973, Ser. No. 354,265
Int. Cl. C08f 27/04
U.S. Cl. 260—78.5 T 10 Claims

The described invention relates to a process for modifying the post-irradiation conductivity of polystyrene comprising forming a copolymer between styrene monomer and no more than 3 weight percent, based on the weight of styrene monomer, of a monomer containing polar groups, said monomer being selected from the group consisting of reactive carboxylic acids and esters, reactive acid anhydrides, or vinyl esters; mixing the resultant copolymer with an aqueous emul-

sion, rendering the emulsion slightly basic by addition of an alkali metal hydroxide; separating the copolymer from the emulsion; and drying the separated copolymer.

3,835,123

PROCESS FOR PREPARING INTERPOLYMERS OF CARBON MONOXIDE AND ETHYLENICALLY UNSATURATED COMPOUNDS

Kenzie Nozaki, St. Louis, Mo., assignor to Shell Oil Company, Houston, Tex.

Filed Mar. 26, 1973, Ser. No. 344,679
Int. Cl. C08f *1/64, 13/04*
U.S. Cl. 260—94.9 B **7 Claims**

High molecular weight, crystalline interpolymers of carbon monoxide with one or more unsaturated compounds such as aliphatic monoolefins are prepared by reacting carbon monoxide with said unsaturated compounds in the presence of catalyst consisting essentially of $HPd(CN)_3$. Novel high molecular weight, crystalline interpolymers of carbon monoxide and unsaturated monoolefins, particularly ethylene, having alternating

and $-C_2H_4-$ units, are described.

3,835,124

METHOD FOR THE PRODUCTION OF CAPROLACTAM AND ITS PRECURSORS BY FORMATION AND NITROSATION OF THE CYCLOPENTAMETHYLENE, KETENE-SO_2 ADDUCT AND PRODUCTS OBTAINED THEREBY

Luigi Giuffre, Milan; Giancarlo Sioli, Como, and Roberto Mattone, Seveso, all of Italy, assignors to Snia Viscosa Societa Nazionale Industria Applicazioni Viscosa S.p.A., Milan, Italy

Filed Jan. 22, 1973, Ser. No. 325,563
Claims priority, application Italy, Jan. 27, 1972, 19882/72
Int. Cl. C07d *41/06*
U.S. Cl. 260—239.3 A **10 Claims**

A method for the preparation of omega lactams is disclosed, more particularly epsilon caprolactam or a precursor thereof (such as cyclohexanone oxime), using as the starting material a cyclomethylene ketene, with the simultaneous formation of side products such as cyclohexanecarboxylic acid, wherein an adduct is preliminarly formed between cyclomethylene ketene and sulphur dioxide. The adduct is then reacted with a nitrosating agent so as to obtain, under the appropriate reaction conditions, the expected lactam, more specifically epsilon caprolactam.

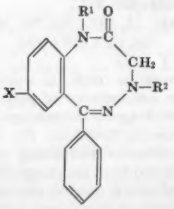
3,835,125

BENZOTRIAZOCINE DERIVATIVES

Minoru Shindo, Tokyo; Morio Kakimoto, Yono; Hiroyuki Nagano, Ageo, and Yasuo Fujimura, Tokyo, all of Japan, assignors to Chugai Seiyaku Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 7, 1973, Ser. No. 330,240
Claims priority, application Japan, Feb. 18, 1972, 47-16382
Int. Cl. C07d *55/54*
U.S. Cl. 260—239.3 B **8 Claims**

Benzotriazocine derivatives represented by the formula



wherein X, represents a hydrogen atom, a halogen atom or an alkyl group, R^1 represents a dialkylaminoalkyl group or an aralkyl group, and R^2 represents a hydrogen atom or a halogenoacetyl group having useful pharmaceutical activities on the central nervous system, and processes for preparing the benzotriazocine derivatives are disclosed.

3,835,126

STYRYL-PYRAZOLINE COMPOUNDS

Helmut Mengler, Frankfurt/Main; Gunter Rosch, Altenhain/Taunus; Erich Schinzel, Hofheim/Taunus, and Otto Smerz, Kelkheim/Taunus, all of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt/Main, Germany

Continuation-in-part of Ser. No. 816,388, April 15, 1969, abandoned. This application Aug. 3, 1971, Ser. No. 168,768
Claims priority, application Switzerland, Apr. 19, 1968, 5801/68
Int. Cl. C07d *49/22*
U.S. Cl. 260—239.9 **5 Claims**

1,5-Diaryl-3-styryl pyrazolines, which are obtained by condensation of a distyryl ketone and an aliphatic 4-hydrazinophenyl sulfone, are useful as optical brighteners, especially in admixture with known 1,3-diaryl pyrazoline brighteners.

3,835,127

20-HYDROCARBYL-6-KETO-STEROIDS

Andor Furst; Andre Furlenmeier, both of Basle; Albert Langemann, Binningen; Guy Waldvogel, Riehen, all of Switzerland; Peter Hocks, Berlin, Germany; Ulrich Kerb, Berlin, Germany, and Rudolf Wiechert, Berlin, Germany, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 571,187, Aug. 9, 1966,. This application Feb. 29, 1968, Ser. No. 709,239
Int. Cl. C07c *173/00*
U.S. Cl. 260—239.55 **21 Claims**

This invention is directed to 2,3-substituted-20-hydrocarbyl 6-keto-steroids which are useful as metamorphosis hormones and are additionally useful as intermediates for the production of other insect hormones. Accordingly, the compounds may be employed in the control of insect population.

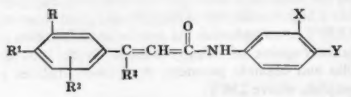
3,835,128

CINNAMANILIDES

Peretz Bracha, Omer, and Arie Waitman, Tel Aviv, both of Israel, assignors to Makhteshim Chemical Works Ltd., Beer-Sheva, Israel

Filed June 8, 1972, Ser. No. 260,900
Claims priority, application Great Britain, June 15, 1971, 28033/71
Int. Cl. C07c *103/22*
U.S. Cl. 260—240 J **5 Claims**

Cinnamanilides of the general formula



wherein R and R^1, which may be identical or different, each designates a member of the group consisting of chlorine, bromine, nitro, cyano, alkyl of one to four carbon atoms, alkoxy of one to four carbon atoms and wherein R and R^1 can form together a group $-O-CH_2-O-$ or $-O-CH_2-CH_2-O-$, R^2 designates a member of the group consisting of hydrogen, chlorine, bromine, alkyl of one to four carbon atoms and alkoxy of one to four carbon atoms, R^3 designates a member of the group consisting of hydrogen, chlorine and bromine, and X and Y each designate chlorine or bromine, and a process for preparing same.

3,835,129

CEPHALOSPORIN C RECOVERY

Gene M. Wild, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Nov. 15, 1971, Ser. No. 198,986
Int. Cl. C07d 99/24
U.S. Cl. 260—243 C 7 Claims

Cephalosporin C is recovered directly from aqueous media by reacting Cephalosporin C therein with certain alkanoic acid anhydrides, e.g., a haloalkanoic acid anhydride or mixed haloalkanoic-alkanoic acid anhydride, at pH 7 to 11, at 0° to 30°C., treating the acylated mixture with quinoline, lowering the pH, stirring, and separating the N-acylated Cephalosporin C quinoline salt hydrate from the aqueous medium.

3,835,130

2-THIA-CEPHAM AND CEPHEM-4-CARBOXYLIC ACIDS

Robert Burns Woodward, Cambridge, Mass., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Oct. 29, 1971, Ser. No. 193,993
Claims priority, application Switzerland, Nov. 3, 1970, 16231/70
Int. Cl. C07d 99/24
U.S. Cl. 260—243 C 4 Claims

The invention concerns 7-amino-2-thiacepham-4-carboxylic acid and 7-amino-2-thiaceph-3-em-4-carboxylic acid compounds and their N-acyl derivatives. These compounds, particularly the latter ones have antibacterial properties. The invention also concerns process for the manufacture of such compounds and intermediates and starting materials useful in such process.

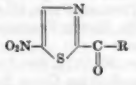
3,835,131

2-ACYL-5-NITROTHIAZOLE DERIVATIVES

Peter Strehlke, Berlin, Germany, assignor to Schering Aktiengesellschaft, Berlin and Bergkamen, Germany

Filed June 23, 1972, Ser. No. 265,467
Claims priority, application Germany, June 24, 1971, 2131888
Int. Cl. C07d 91/32
U.S. Cl. 260—243 B 17 Claims

This invention relates to 2-acyl-5-nitrothiazole derivatives of the formula



wherein R is amino, piperazine, mono- or bis(hydroxyalkyl)amino or mono- or bis(aminoalkyl)amino, each of which can be unsubsituted or substituted on the oxygen or nitrogen atom by lower alkyl; phenylamino; di-, tri-, tetra-, penta-, hexa-, or heptamethylenimino; morpholino; thiomorpholino; hydroxy or OX wherein X is halogen.

3,835,132

MORPHOLINO-PIPERAZINYL PYRIMIDINES

John B. Carr; George R. Haynes; James R. Albert, all of Modesto, and K. Kodama, Alamo, all of Calif., assignors to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 111,635, Feb. 1, 1972, abandoned. This application Sept. 21, 1973, Ser. No. 399,783
Int. Cl. C07d 87/40
U.S. Cl. 260—247.5 D 3 Claims

2-morpholino-4-(ethylamino)-6-(1-piperazinyl) pyrimidine and its dihydro(middle halide) salts, useful as anti-inflammatory agents.

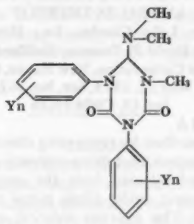
3,835,133

HEXAHYDRO-1,3,5-TRIAZINE-2,4-DIONES

Karl Seckinger, Riegal/Baden, Germany, assignor to Sandoz Ltd., Basle, Switzerland

Continuation-in-part of Ser. No. 207,597, Dec. 13, 1971, abandoned. This application Mar. 15, 1971, Ser. No. 341,405
Int. Cl. C07d 55/18
U.S. Cl. 260—248 NS 11 Claims

The present invention concerns novel hexahydro-1,3,5-triazine-2,4-diones of the general formula:



I

wherein each Y is alkyl, trifluoroalkyl, fluorine, chlorine, bromine, alkoxy, aryloxy or nitro and *n* is o, 1, 2 or 3.

The compounds exhibit a herbicidal effect.

3,835,134

POLYCHLOROISOCYANURIC ACIDS PREPARED FROM A MONOALKALI METAL CYANURATE

Henry W. Schiessl, Northford; Duane L. Sawhill, Orange, and Sudhir K. Bhutani, West Haven, all of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Apr. 20, 1973, Ser. No. 353,097
Int. Cl. C07d 55/42
U.S. Cl. 260—248 C 19 Claims

Polychloroisocyanuric acids are produced by the reaction of monoalkali metal cyanurate with hypochlorous acid and a chlorine-containing compound selected from the group consisting of chlorine and chlorine octahydrate where the molar ratio of chlorine-containing compound to monoalkali metal cyanurate is at least 1:1. Where an excess of chlorine-containing compound is used, this excess is employed to remove any gaseous by-products such as nitrogen trichloride, which may be formed during the reaction. This excess containing gaseous by-products is reacted with an alkali metal compound to convert the chlorine present to an alkali metal hypochlorite, which is further reaction to form hypochlorous acid. The hypochlorous acid can be used in the chlorination reaction. Reaction conditions include a temperature range of from −5° to 45°C. and a pH of 3 to 4.5.

3,835,135

POLYCHLOROISOCYANURIC ACIDS PREPARED FROM A MONOALKALI METAL CYANURATE

Duane L. Sawhill, Orange, Conn., assignor to Olin Corporation, New Haven, Conn.

Filed Apr. 20, 1973, Ser. No. 353,098
Int. Cl. C07d 55/42
U.S. Cl. 260—248 C 20 Claims

Polychloroisocyanuric acids are produced by the reaction of monoalkali metal cyanurate with an alkali metal hypochlorite and a chlorine-containing compound selected from the group consisting of chlorine and chlorine octahydrate, where the molar ratio of chlorine-containing compound to the alkali metal hypochlorite and monoalkali metal cyanurate combined is at least 1:1. Where an excess of chlorine-containing compound is used, this excess is employed to remove any gaseous by-products such as nitrogen trichloride, which may be formed during the reaction. This excess containing gaseous by-products is reacted with an alkali

metal compound to convert the chlorine present to an alkali metal hypochlorite, which is used in the chlorination reaction. Reaction conditions include a temperature range of from −5° to 45°C. and a pH of 3 to 4.5.

3,835,136

RECOVERY OF CHLORINE AND CYANURIC ACID VALUES FROM POLYCHLOROISOCYANURIC ACID AND SALTS THEREOF

Louis C. Hirdler, Lake Charles, La.; Henry W. Schiessl, Northford, and David F. Doonan, Guilford, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed May 22, 1973, Ser. No. 362,694
Int. Cl. C07d *55/36*
U.S. Cl. 260—248 A **14 Claims**

A process is described for recovering chlorine and cyanuric acid values from aqueous solutions containing a chlorinated s-triazine compound selected from the group consisting of polychloroisocyanuric acids, alkali metal salts thereof and mixtures thereof. The aqueous solution of chlorinated s-triazine compound is reacted with a mineral acid to form chlorine and cyanuric acid. An inert gas is preferably passed simultaneously through the aqueous solution to remove chlorine as it forms. The chlorine-depleted aqueous slurry containing solid cyanuric acid is separated, for example, by filtration to recover cyanuric acid.

The resulting solids-free mother liquor, which contains some dissolved cyanuric acid is contacted with an adsorbent, such as activated carbon, which adsorbs the cyanuric acid from the liquid. The liquid, substantially free of chlorine and cyanuric acid values, is conveyed to waste.

Cyanuric acid adhering to the adsorbent is removed from the adsorbent with an alkali metal hydroxide or carbonate solution.

Recovered cyanuric acid values may be used in the preparation of additional polychloroisocyanuric acid or alkali metal salts thereof.

3,835,137

FIBRINOLYTIC TETRAZOLO(1,5-C)QUINAZOLINES

Eugene R. Wagner, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Oct. 13, 1972, Ser. No. 297,465
Int. Cl. C07d *51/48*
U.S. Cl. 260—256.4 F **2 Claims**

Tetrazoloquinazoline compounds such as 5-[4-(dimethylamino)phenyl]5,6-dihydro-tetrazolo(1,5-c)-quinazoline are prepared by the reaction of 5-(2-amino-phenyl)tetrazole with a 4-dialkylaminobenzaldehyde. The compounds are useful as fibrinolytic agents.

3,835,138

BRONCHODILATOR 5,6-DIHYDRO-TETRAZOLO(1,5-C) QUINAZOLINES

Eugene R. Wagner, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Oct. 13, 1972, Ser. No. 297,467
Int. Cl. C07d *51/48*
U.S. Cl. 260—256.4 F **6 Claims**

Tetrazoloquinazoline compounds such as 5,6-dihydro-5-ethyl-8,9-dimethoxy-5-methyl-tetrazolo(1,5-c)-quinazoline are prepared by the reaction of a 5-(2-aminophenyl)tetrazole with a ketone or aldehyde. The compounds are useful as bronchodilator agents.

3,835,139

N-SUBSTITUTED ACRIDONE CARBOXYLIC ACIDS AND DERIVATIVES

Jurg R. Pfister, Los Altos; Ian T. Harrison, and John H. Fried, both of Palo Alto, all of Calif., assignors to Syntex, (U.S.A.) Inc., Palo Alto, Calif.

Filed July 19, 1972, Ser. No. 273,291
Int. Cl. C07d *37/20*
U.S. Cl. 260—279 R **12 Claims**

Compositions containing and methods employing, as the essential ingredient, acridone carboxylic acid compounds which are useful in the treatment of allergic conditions. Methods for preparing thses compounds and compositions are also disclosed. N-methylacridone-2-carboxylic acid and 7-methoxyacridone-2-carboxylic acid are illustrated as representative of the class.

3,835,140

PROCESS FOR THE PREPARATION OF DEHYDROBERBINIUM SALTS

Kwang Yuen Zee-Cheng, Overland Park, Kans., and Chia-Chung Cheng, Kansas City, Mo., assignors to The United States of America as represented by the Secretary of the Department of Health, Education and Welfare, Washington, D.C.

Filed Jan. 30, 1973, Ser. No. 328,074
Int. Cl. C07d *39/12*
U.S. Cl. 260—283 SY **12 Claims**

A process for the synthesis of coralyne salts and related dehydroberbinium salts. The process includes a phenylacetyl chloride and phenylethylamine condensation, followed by cyclization, aromatization and formation of a dehydroberbinium sulfoacetate, which may thereafter be converted into other dehydroberbinium salts. The coralyne salts have antineoplastic activity.

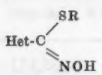
3,835,141

QUINALYTHIOHYDROXIMIC ACIDS AND THEIR DERIVATIVES

Charles Malen, Fresnes; Bernard Danree, St. Germain en Laye, and Xavier Pascaud, Paris, all of France, assignors to Science Union Et Cie, Societe Francaise De Recherche Medicale, Suresnes, France

Filed Mar. 30, 1972, Ser. No. 239,778
Claims priority, application Great Britain, Apr. 15, 1971, 9502/71
Int. Cl. C07d *35/28*; C07c *33/38*
U.S. Cl. 260—283 S **11 Claims**

Thiohydroximic acid compounds of the formula:



wherein Het is pyridyl, pyrazinyl, quinolyl, isoquinolyl, or these radicals substituted by halogen, lower alkyl or lower alkoxy, and R is hydrogen, lower alkyl, aryl or aryl-lower-alkyl, provided that R never by hydrogen when Het is 4-pyridyl.

These compounds possess gastric antisecretory, antiulcerous, gastrointestinal motility increasing, central nervous system stimulating and vasodilatory properties.

3,835,142
1-(2-IMIDAZOLIN-2-YL)-2-(1,2,3,4-TETRAHYDRO-2-ISOQUINOLYL)-2-IMIDAZOLINES

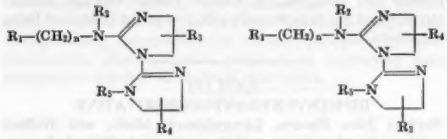
Raymond R. Wittekind, Morristown, and John Shavel, Jr., Mendham, both of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Continuation-in-part of Ser. No. 6,639, Jan. 28, 1970, Pat. No. 3,666,767. This application May 15, 1972, Ser. No. 253,222

Int. Cl. C07d *31/36*

U.S. Cl. 260—286 R **2 Claims**

The present invention relates to 2-amino-1-(2-imidazolin-2-yl)-2-imidazolines, the free base of which has the following structural formulas:



wherein

R_1 is hydrogen, lower alkyl, cycloalkyl, aryl, substituted aryl, heterocyclic, substituted heterocyclic or aryloxy;

R_2 is hydrogen, lower alkyl, aryl and substituted aryl;

or R_1 and R_2 taken together with the nitrogen atom to which they are attached form a heterocyclic ring;

R_3 and R_4 are hydrogen, lower alkyl, aryl, or substituted aryl;

R_5 is hydrogen, lower alkyl, aryl or substituted aryl;

n is an integer from 0 to 10.

The compounds of this invention are useful as antiarrhythmic agents as well as antibacterial agents.

3,835,143
CERTAIN 2(1H) PYRIDINETHIONES

Bruce E. Witzel; Tsung-Ying Shen, both of Westfield; Patricia M. Graham, Mountainside; Robert L. Clark, Woodbridge, and Arsenio A. Pessolano, Colonia, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 45,547, June 11, 1970, Pat. No. 3,721,676, which is a continuation-in-part of Ser. No. 876,058, Nov. 12, 1969, abandoned. This application Jan. 25, 1972, Ser. No. 220,720

Int. Cl. C07d *31/50*

U.S. Cl. 260—294.8 T **2 Claims**

Novel secondary and tertiary aminopyridones useful as antiinflammatory, analgesic and antipyretic agents.

3,835,144
AMINO DERIVATIVES OF (4,3-C PYRAZOLOPYRIDINE CABROXYLIC ACIDS AND ESTERS

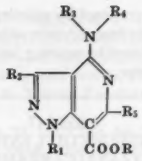
Theodor Denzel, Nurnberg, and Hans Hoehn, Tegernheim, both of Germany, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed June 16, 1972, Ser. No. 263,566

Int. Cl. C07d *31/36*

U.S. Cl. 260—295.5 B **6 Claims**

New amino derivatives of pyrazolo[4,3-c]pyridine-7-carboxylic acids and esters have the general formula



They are useful as ataractic, analgesic and anti-inflammatory agents. In addition, the new compounds increase the intracellular concentration of adenosine-3′,5′-cyclic monophosphate.

3,835,145
2- AND 3-PYRIDYLISOTHIOCYANATES

William B. Dickinson, Albany, and Marcia P. Vaupotic, Troy, both of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Filed Sept. 11, 1972, Ser. No. 287,620

Int. Cl. C07d *31/50*

U.S. Cl. 260—294.8 E **6 Claims**

N-(2-and 3-Pyridyl)-1-polymethyleneiminothiocarboxamides useful as anthelmintic agents and prepared by reaction of certain 2- or 3-pyridylisothiocyanates, which are also useful as anthelmintic agents, with an appropriate polymethyleneimine.

3,835,146
SUBSTITUTED FUSARIC ACID DERIVATIVES

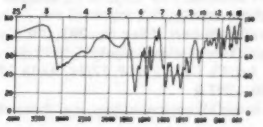
Tetsuji Miyano; Kunio Suzuki, and Hiroshi Fukatsu, all of Nagoya, Japan, assignors to Banyu Pharmaceutical Co. Ltd., Tokyo and Hiroyoshi Hidaka, Minami-ku, Nagoya-shi, both of, Japan

Filed May 30, 1972, Ser. No. 257,834

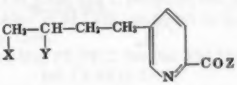
Claims priority, application Japan, May 28, 1971, 46-36220; Oct. 1, 1971, 46-76237

Int. Cl. C07d *31/36*

U.S. Cl. 260—295 R **13 Claims**



Halo-fusaric acid derivatives of the formula:



wherein X represents halogen or hydrogen, Y represents halogen, and Z represents — OM or an amine, wherein M represents hydrogen or a salt or ester residue thereof which are characterized by significant activity in inhibiting the formation of dopamine-β-hydroxylase and in the treatment of hypertension, and which are further characterized by relative-

ly low toxicity, are prepared by reacting dehydrofusaric acid with a halogen or a hydrogen halide. Alternatively, these compounds can be produced by reacting halo-fusaric acid with an acyloxhalomethyl ester.

3,835,147

3-PYRIDYLMETHYL ESTER OF 5-BENZOFURAZANYLCARBAMATE-1-OXIDE

Edward E. Kilbourn, Chalfont, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed Apr. 18, 1973, Ser. No. 352,854

Int. Cl. C07d *31/36*

U.S. Cl. 260—295.5 B **2 Claims**

Novel 3-pyridylmethyl N-heterocyclic-carbamates. They are useful rodenticides.

3,835,148

AQUEOUS POLYSTYRENE CONTAINING DISPERSIONS AS ANTI-STATICS FOR THE PERMANENT FINISHING OF FIBRE MATERIALS

Josef Oxe, Arlesheim, and Rudolf Keller, Riehen, both of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Filed Feb. 15, 1972, Ser. No. 226,511

Claims priority, application Switzerland, Feb. 16, 1971, 2248/71

Int. Cl. C08f *45/44*

U.S. Cl. 260—29.6 MN **8 Claims**

Disclosed is an aqueous acid solution or suspension of a preparation as well as the production thereof for the permanent finishing of fibre materials, especially dyed carpets, to render them antistatic, dirt-repellent and, optionally, antimicrobial, which aqueous preparation contains:

a. 10 to 20 per cent by weight of at least one antistatic agent,
b. 3 to 35 per cent by weight of a stabilised, aqueous non-film-forming dispersion of polystyrene,
c. 1 to 6 per cent by weight of at least one acid, especially o-phosphoric acid, and
d. 0 to 5 per cent by weight of further components, such as an antimicrobic agent and a solubility-promoting agent.

3,835,149

3-AROYL-ALKENYLENEIMINES

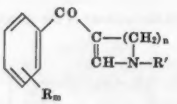
Harris Burt Renfroe, New City, N.Y., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 203,479, Nov. 30, 1971, abandoned. This application July 7, 1972, Ser. No. 269,901

Int. Cl. C07d *29/38, 27/14;* **A61k** *27/00*

U.S. Cl. 260—297 R **6 Claims**

3-Aroyl-lower alkenyleneimines, e.g. those of the formula



R = H, alkyl, free, etherified or esterified OH, CF_3 or an amino
R′ = H, alkyl or acyl
$m = 1$ or 2 $n = 2$–4
or carbonyl or amino derivatives thereof are anti-inflammatory agents.

3,835,150

DERIVATIVES OF 3-ISOTHIAZOLONES WITH ACTIVE HALOGEN COMPOUNDS

Sheldon N. Lewis, Willow Grove, and George Allen Miller, Glenside, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 57,367, July 22, 1970, Pat. No. 3,706,757, which is a continuation-in-part of Ser. No. 647,586, June 21, 1967, Pat. No. 3,544,580. This application May 12, 1972, Ser. No. 254,810

Int. Cl. C07d *91/12, 91/10*

U.S. Cl. 260—302 A **3 Claims**

Disclosed herein is a novel group of compounds which are properly designated as 3-isothiazole derivatives being obtained, for the most part, by reacting a substituted 3-hydroxyisothiazole with an active halogen compound. These compounds and compositions thereof exhibit biocidal characteristics and are exceptionally effective in the control of living organisms.

3,835,151

DIPHENYLHYDANTOIN DERIVATIVE

Herbert John Havera, Edwardsburg, Mich., and Wallace Glenn Strycker, Goshen, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Filed Apr. 16, 1973, Ser. No. 351,319

Int. Cl. C07d *49/36*

U.S. Cl. 260—309.5 **2 Claims**

N-(2-diethylamino)ethyl-α-(5,5-diphenylhydantoin-3-yl)acetamide and nontoxic salts thereof exhibit antiarrhythmic activity in mammals.

3,835,152

3-CYANO-9-BENZOYL-1,2,3,4-TETRAHYDRO CARBAZOLE

Ernest John Alexander, East Greenbush, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

Filed Nov. 17, 1972, Ser. No. 307,477

Int. Cl. C07d *27/68*

U.S. Cl. 260—315 **1 Claim**

Novel 3-Z-9-benzoyl-1,2,3,4-tetrahydrocarbazoles, wherein Z is $CONR_5R_6$, CONHOH, CN, or $COCH_2X$, where X is chloro or bromo, having antimicrobial and/or anti-inflammatory activity are disclosed. Compounds wherein Z is $CONR_5R_6$ and CONHOH are prepared from the corresponding 3-carboxylic acids by conversion to the corresponding acid chlorides and subsequent reaction with the appropriate amines and hydroxylamine respectively; compounds where Z is CN are prepared by the dehydration of the corresponding compounds where Z is $CONH_2$; and the compounds where Z is $COCH_2X$ are prepared by reacting hydrogen chloride or bromide with the corresponding compounds where Z is $COCHN_2$ which in turn is prepared from the corresponding 3-carboxylic acid chloride by reaction with diazomethane.

3,835,153

N-(PHENYLALKYL)-ACYLAMIDE DERIVATIVES

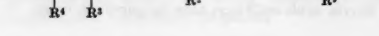
Ulf Henrik Anders Lindberg, Sodertalje, Sweden, assignor to Aktiebolaget Astra, Sodertalje, Sweden

Division of Ser. No. 838,313, July 1, 1969, Pat. No. 3,692,784. This application Mar. 20, 1972, Ser. No. 236,527The portion of the term of this patent subsequent to Oct. 19, 1989, has been disclaimed.

Int. Cl. C07d *27/04*

U.S. Cl. 260—326.43 **2 Claims**

Compounds of the formula



wherein R^1 and R^2 may be the same or different and selected from the class consisting of alkyl groups of one to three carbon atoms, including isopropyl, R^3, R^4, R^5, R^6 and R^7 may be the same or different and each selected from the class consisting of a hydrogen atom, straight and branched alkyl groups of one to three carbon atoms, straight and branched alkoxy groups of one to three carbon atoms and halogen atoms, at least two of R^3, R^4, R^5, R^6 and R^7 being hydrogen and at least one of R^3 and R^7 being hydrogen when m is O; R^8 and R^9 may be the same or different and each selected from the class consisting of a hydrogen atom and straight and branched alkyl groups of one to three carbon atoms, or when R^8 is hydrogen R^9 may together with Am form a heterocyclic ring containing a nitrogen atom; Am is an amino group selected from the class consisting of pyrrolidino, piperidino, morpholino and monoalkylamino and dialkylamino groups in which the alkyl radicals are straight or branched and contain one to four carbon atoms; *m* and *n* is 0 or 1, at least one of *m* and *n* being 0; and therapeutically acceptable salts thereof, processes for their preparation, pharmaceutical preparations containing such compounds and their use as local anesthetics.

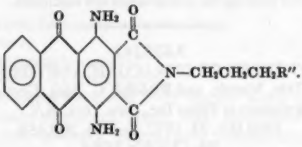
3,835,154

BLUE DISPERSE 1,4-DIAMINOANTHRAQUINONE-2,3-DICARBOXIMIDE DYES

Donald Edward Putzig, Newark, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed July 25, 1972, Ser. No. 275,039
Int. Cl. C07d *27/52*
U.S. Cl. 260—326 C **8 Claims**

Greenish-blue to blue disperse diaminoanthraquinonedicarboximide dyes having good application and fastness properties on water swellable cellulosic or synthetic fibers or blends or mixtures thereof, for example, cotton fabrics and polyester/cotton blend fabrics, said dyes having the formula



wherein R is Ophenyl, O(p-C_{1-8} alkylphenyl), OCH(phenyl)$_2$, N(C_{1-8} alkyl)phenyl or N(phenyl)$_2$.

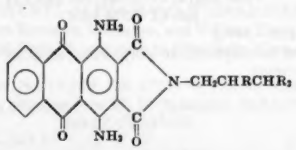
3,835,155

BLUE DISPERSE 1,4-DIAMINOANTHRAQUINONE-2,3-DICARBOXIMIDE DYES

John Blackwell, Kennett Square, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed July 25, 1972, Ser. No. 275,040
Int. Cl. C07d *27/52*
U.S. Cl. 260—326 C **3 Claims**

Greenish-blue to blue disperse diaminoanthraquinonedicarboximide dyes having good application and fastness properties on water swellable cellulosic or synthetic fibers or blends or mixtures thereof, for example, cotton fabrics and polyester/cotton blend fabrics, said dyes having the formula



wherein one R is H and the other two are phenyl.

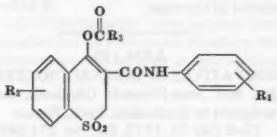
3,835,156

ACYL DERIVATIVES OF 4-HYDROXY-2H-1-BENZOTHIOPYRAN-3-CARBOXAMIDE 1,1-DIOXIDE

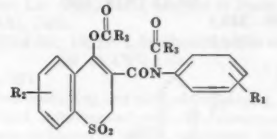
Harold Zinnes, Rockaway, and Neil A. Lindo, Chatham, both of N.J., assignors to Warner-Lambert Company, Morris Plaines, N.J.

Filed Mar. 23, 1973, Ser. No. 344,380
Int. Cl. A61k *27/00*; **C07d** *65/08*
U.S. Cl. 260—327 TH **3 Claims**

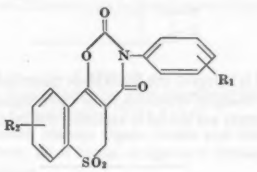
Acyl derivatives of 4-hydroxy-2H-1-benzothiopyran-3-carboxamide 1,1-dioxide having the following structural formulas are disclosed:



II



III



IV

wherein R_1 and R_2 are hydrogen, alkyl, aryl, aralkyl, alkoxy, halogen, cyano, nitro, trifluoromethyl, and the like.

These compounds are useful as anti-inflammatory agents.

3,835,157

HETEROCYCLIC SUBSTITUTED XANTHONE CARBOXYLIC ACID COMPOUNDS

Jurg R. Pfister, Los Altos; Ian T. Harrison, and John H. Fried, both of Palo Alto, all of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed May 17, 1972, Ser. No. 254,232
Int. Cl. A61k *27/00*
U.S. Cl. 260—332.2 A **17 Claims**

Compounds containing and methods employing, as the essential ingredient, heterocyclic substituted xanthone carboxylic acid compounds which are useful in the treatment of allergic conditions. Methods for preparing these compounds and compositions and intermediates therein are also disclosed. 7-(3-Tetrahydrofuryl)-xanthone-2-carboxylic acid is illustrated as representative of the class.

3,835,158

HETEROCYCLIC SUBSTITUTED XANTHONE CARBOXYLIC ACID COMPOUNDS

Jurg R. Pfister, Los Altos; Ian T. Harrison, and John H. Fried, both of Palo Alto, all of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed May 17, 1972, Ser. No. 254,233
Int. Cl. C07d *63/12*
U.S. Cl. 260—332.2 A **19 Claims**

Compounds containing and methods employing, as the essential ingredient, heterocyclic substituted xanthone carboxylic acid compounds which are useful in the treatment of allergic conditions. Methods for preparing these compounds and compositions and intermediates therein are also disclosed. 7-(2-Tetrahydrofuryl)-xanthone-2-carboxylic acid is illustrated as representative of the class.

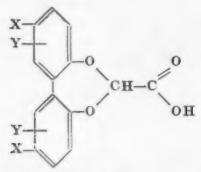
3,835,159

DERIVATIVES OF DIBENZODIOXEPINE

Henry Najer, and Jean-Francois Giudicelli, both of Paris, France, assignors to Synthelabo, Paris, France

Filed July 21, 1972, Ser. No. 274,049
Claims priority, application France, July 23, 1971, 71.26967
Int. Cl. C07d *17/00*
U.S. Cl. 260—340.3 **6 Claims**

The acids of the formula:



in which X is halogen, trihaloalkyl, or thiotrihaloalkyl and Y is hydrogen, halogen, trihaloalkyl, or thiotrihaloalkyl, and their salts and esters are useful in reducing the lipid content of the blood.

3,835,160

3′-KETO-2′,3′-SECO-1′-(2′)-YNE STEROIDAL DERIVATIVES, METHODS FOR THEIR MANUFACTURE, AND COMPOUNDS PRODUCED THEREBY

Masato Tanabe, Palo Alto, Calif., assignor to Schering Corporation, Bloomfield, N.J.

Continuation-in-part of Ser. No. 644,761, June 6, 1967, abandoned. This application June 20, 1967, Ser. No. 647,315
Int. Cl. C07d *13/04*
U.S. Cl. 260—340.9 **10 Claims**

Described herein are novel 3′-keto-2′,3′-seco-1′(2′)-yne steroidal structures and processes for their preparation and, in particular, the preferred embodiment thereof, i.e., 5-keto-4,5-seco-3-ynes of the estrane, androstane, and pregnane series having physiological activity and being particularly useful as intermediates in preparing pharmacologically active 6- and/or 10-substituted steroids.

There are described three process aspects, the preferred modes of which are as follows:

1. The first preferred process comprises the preparation of 5-keto-4,5-seco-3-yne steroids from 3-keto-4-dehydro steroids having a tertiary carbon at C-3, via the 3-hydrocarbonsulfonylhydrazono-4,5-oxido derivative thereof which undergoes fission and rearrangement in situ to form the 5-keto-4,5-seco-3-yne structure;
2. The second preferred process comprises reacting any 6- and/or 10- unsubstituted-5-keto-4,5-seco-3-yne in an alkylating medium with a hydrocarbon sulfonate or, preferably, a hydrocarbon halide to form a 6- and/or 10-hydrocarbon substituted-5-keto-4,5-seco-3-yne; and
3. The third preferred process comprises treating a 5-keto-4,5-seco-3-yne with an alkali metal borohydride to form a 5-hydroxy-4,5-seco-3-yne.

Also described in detail (including examples) are two methods whereby the preferred 5-keto-4,5-seco-3-ynes of this invention are converted to pharmacologically valuable 6- and/or 10- hydrocarbon substituted-3-keto-4-dehydro steroids, e.g.,

1. by reaction with mercuric acetate and sulfuric acid in acetic acid; or
2. by reaction with mercuric oxide and trifluoroacetic acid followed by treatment of the thereby formed 3,5-diketo-4,5-seco steroid with potassium t-butoxide in t-butanol.

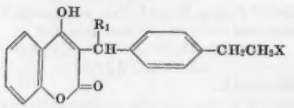
3,835,161

3-SUBSTITUTED-4-HYDROXY-COUMARINS

Jean Marie De Muylder, Brussels, Belgium, assignor to Societe D'Etudes Et De Realisations Scientifiques en abrege "S.E.RES.C.I. s.p.r.L., Brussels, Belgium

Filed Oct. 24, 1972, Ser. No. 300,084
Int. Cl. C07d *7/26*
U.S. Cl. 260—343.2 R **10 Claims**

New 3-substituted-4-hydroxy-coumarins of the formula:



wherein R_1 represents a lower alkyl radical containing 1 to 3 carbon atoms and X represents chlorine, bromine or iodine; pharmaceutical compositions containing such compounds and a process for making the compounds are disclosed.

3,835,162

SYNTHESIS OF CITRACONIC ANHYDRIDE

Bryce E. Tate, Niantic, and Rudolph G. Berg, Groton, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Filed Oct. 25, 1972, Ser. No. 300,458
Int. Cl. C07c *55/04*
U.S. Cl. 260—346.8 R **4 Claims**

Citraconic anhydride can be prepared in high yield by reacting with an excess of formaldehyde at least one compound selected from the group consisting of succinic anhydride, and di-lower alkyl esters of succinic acid, in the vapor phase at a temperature of about 280–410°C. in the presence of a catalyst selected from the group consisting of thorium sulfate, potassium diacid phosphate, or lithium carbonate on an alundum support, or lithium phosphate. Itaconic acid is conveniently prepared by hydrolyzing the citraconic anhydride to citranconic acid, and then isomerizing the acid to yield itaconic acid.

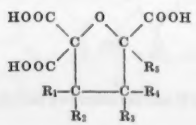
3,835,163

TETRAHYDROFURAN POLYCARBOXYLIC ACIDS

John N. Rapko, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Aug. 2, 1973, Ser. No. 385,131
Int. Cl. C07d *5/04*
U.S. Cl. 260—347.3 **11 Claims**

Salts of tetrahydrofuran polycarboxylic acids represented by the formula



wherein R_1, R_2, R_3, R_4 and R_5 are hydrogen or carboxylic acid groups, at least one of R_1, R_2, R_3 and R_4 being a carboxylic acid group when R_5 is a carboxylic acid group are useful as complexing agents and/or detergency builders. The ester forms of such compounds, as well as the acids are useful as intermediates for production of the salts.

3,835,164
N-ALKOXYCARBONYL-N'-ACYL-N''12-ACYLAMIDOPHENYL-GUANIDINES

Arno Widdig, Blecher; Engelbert Kuhle, Bergisch-Glad-Bach; Helmut Kaspers, Leverkusen, and Ferdinand Grewe, Burscheid, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

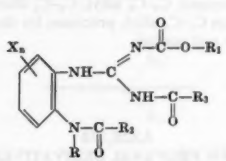
Filed Nov. 2, 1972, Ser. No. 303,301

Claims priority, application Germany, Nov. 19, 1971, 2157368

Int. Cl. C07d *5/26*

U.S. Cl. 260—347.4 **7 Claims**

N-alkoxycarbonyl-N'-acyl-N''-2-acylamidophenyl-guanidines of the formula



(I)

in which

X is halogen, lower alkyl or lower alkoxy,

n is 0, 1 or 2,

R is hydrogen or lower alkyl,

R_1 is alkyl of 1–6 carbon atoms,

R_2 is hydrogen, alkyl with 1–18 carbon atoms optionally substituted by halogen, cyano, lower alkoxy, lower alkoxycarbonyl, phenoxy, halophenoxy, alkylphenoxy or alkoxyphenoxy; cycloalkyl of 5–8 carbon atoms; aralkyl optionally substituted by halogen, lower alkyl or lower alkoxy; aryl optionally substituted by halogen, lower alkyl or lower alkoxy; or furyl; and

R_3 is hydrogen, alkyl with 1–18 carbon atoms optionally substituted by halogen, cyano, lower alkoxy, lower alkoxycarbonyl, phenoxy, halophenoxy, alkylphenoxy or alkoxyphenoxy; alkenyl or alkynyl of 2–12 carbon atoms; cycloalkyl of 5–8 carbon atoms; aralkyl optionally substituted by halogen, lower alkyl or lower alkoxy; aryl optionally substituted by halogen, lower alkyl or lower alkoxy; or furyl,

which possess fungicidal properties.

3,835,165
NITROFURYL-ALPHA-HALO-HYDRAZONES

Graham Arton Howarth, Wilmslow, and William Hoyle, Bramhall, both of England, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 15,209, Feb. 27, 1970, Pat. No. 3,682,953. This application June 15, 1972, Ser. No. 263,047

Int. Cl. C07d *5/30*

U.S. Cl. 260—347.5 **4 Claims**

5-Amino-4-cyano-3-(5-nitro-2-furyl)-pyrazoles, substituted in 1-position of the pyrazole moiety by alkyl, hydroxyalkyl or carbalkoxy, and pharmaceutically acceptable acid addition salts thereof, have antimicrobial properties; compositions containing these compounds and methods for the treatment of microbial infections and protecting organic material against microbial attack; a typical embodiment is 5-amino-4-cyano-1-methyl-3-(5-nitro-2-furyl)-pyrazole.

3,835,166
2,2-DIALKYLEPOXIDES

Robert Malone Gipson; Ernest Leon Yeakey, and William Jennings Peppel, all of Austin, Tex., assignors to Jefferson Chemical Company, Inc., Houston, Tex.

Filed June 16, 1972, Ser. No. 263,678

Int. Cl. C07d *1/12*

U.S. Cl. 260—348 R **3 Claims**

Particular 2,2-dialkylepoxide compositions are provided which are characterized by their novel structure, their liquidity at room temperature and by their unique applicability to a variety of uses.

3,835,167
ANTHRONE CARBOXYLIC ACIDS AND DERIVATIVES

Jurg R. Pfister, Los Altos, Calif., assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Dec. 18, 1972, Ser. No. 315,858

Int. Cl. C07c *63/44*

U.S. Cl. 260—351 **10 Claims**

Compositions containing and methods employing, as the essential ingredient, anthrone carboxylic acid compounds which are useful in the treatment of allergic conditions. Methods for preparing these compounds and compositions are also disclosed. anthrone-2-carboxylic acid and 7-methoxyanthrone-2-carboxylic acid are illustrated as representative of the class.

3,835,168
QUINONE DERIVATIVES AND COMPOSITIONS CONTAINING THE SAME

Hideo Kano, Osaka; Masaru Ogata, Kobe, and Hisajiro Yukinaga, Kusatasu, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Filed Jan. 25, 1972, Ser. No. 220,708

Claims priority, application Japan, Feb. 9, 1971, 46-5389; Feb. 9, 1971, 46-5390; Feb. 9, 1971, 46-5393; Mar. 31, 1971, 46-19410

Int. Cl. C07c *119/14*

U.S. Cl. 260—396 R **11 Claims**

Novel quinone derivatives having plant-growth regulating activity and being prepared by light irradiation or catalytic reduction from isoxazole derivatives, and compositions containing the said quinone derivatives.

3,835,169
LANOLIN DERIVATIVES ESSENTIALLY COMPRISING ESTERS OF LANOLIN ALCOHOL WITH LACTIC ACID

Elise Kraft, 2109 Broadway, New York, N.Y. 10023, and Mitchell L. Schlossman, 20 Lake Shore Dr., Rockway, N.J. 07866

Filed June 23, 1971, Ser. No. 156,023

Int. Cl. C11b *11/00;* **C07c** *69/68;* **A61k** *7/00*

U.S. Cl. 260—397.2 **2 Claims**

Lanolin derivatives essentially comprising esters of lanolin alcohol with lactic acid and higher fatty acids are provided. The derivatives are prepared by direct reaction of lanolin alcohol with the higher fatty acid.

The lanolin derivatives disclosed are especially adapted for use as essential or advantageous ingredients of various cosmetic compositions.

3,835,170
HYPOTENSIVE AGENT, OUDENONE, ITS SALTS AND PROCESSES FOR PRODUCTION AND PREPARATION THEREOF

Hamao Umezawa, Tokyo; Osamu Tanabe, Kyoto, and Tomio Takeuchi, Tokyo, all of Japan, assignors to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai, Tokyo, Japan

Filed Jan. 15, 1971, Ser. No. 106,746

Claims priority, application Japan, Feb. 3, 1970, 45-8984; May 12, 1970, 45-39772

Int. Cl. C07c *49/32*

U.S. Cl. 260—438.1 **2 Claims**

A hypotensive compound designated oudenone and metal salts of oudenone, oudenone being produced by a process which comprises cultivating a strain of a mushroom in an aqueous nutrient medium until substantial amount of oudenone is accumulated in said medium and then recovering oudenone from said medium and metal salts of oudenone being produced by adding inorganic or organic metal compound to oudenone solution.

3,835,171
PHENOXY ACETALS AND THEIR UTILITY AS HERBICIDES

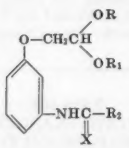
Eugene G. Teach, El Cerrito, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

Division of Ser. No. 124,541, March 15, 1973, Pat. No. 3,780,104. This application Aug. 3, 1973, Ser. No. 385,514

Int. Cl. C07c *155/02, 155/04, 155/08*

U.S. Cl. 260—455 A **5 Claims**

Meta-phenoxy acetals having the formula



in which X is oxygen or sulfur, R and R_1 are independently lower alkyl, R and R_1 taken together are ethylene or trimethylene, R_2 is alkyl, monocyclohexylamino, monoalkylamino, monoalkenylamino, dialkylamino, alkoxy, alkylthio, haloalkyl, substituted-phenyl wherein said substituents are methyl, monochloro or dichloro. The compounds are useful as herbicides.

3,835,172
PROCESS FOR THE MANUFACTURE OF AROMATIC ISOCYANATES USING OXYETHYLATE CATALYSTS

Otto Arndt, Hofheim/Taunus; Gunther Semler, Kelkheim/Taunus, and Georg Schaeffer, Frankfurt/Main, all of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt/Main, Germany

Continuation-in-part of Ser. No. 842,351, July 16, 1969, abandoned. This application Jan. 12, 1972, Ser. No. 217,384

Claims priority, application Germany, July 25, 1968, 1793021

Int. Cl. C07c *119/04*

U.S. Cl. 260—453 PH **11 Claims**

Improved process for the preparation of aromatic isocyanates by reaction of phosgene with primary aromatic amines or their salts in a suspension in an inert solvent, in which the reaction is carried out in the presence of catalytic amounts of a compound containing at least 6 polyethylene oxide groups in one chain. By the addition of said compound the required amount of phosgene is reduced, the reaction proceeds faster and the isocyanates are obtained in higher yields.

3,835,173
NEW PROPANAL DERIVATIVES

Odd Kristiansen, Reinach/BL, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

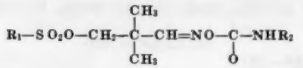
Division of Ser. No. 198,420, Nov. 12, 1971, Pat. No. 3,718,683. This application Jan. 10, 1973, Ser. No. 322,591

Claims priority, application Switzerland, Nov. 20, 1970, 17206/70; Sept. 24, 1971, 13991/71

Int. Cl. C07c *131/00*

U.S. Cl. 260—456 A **2 Claims**

2,2-Dimethyl-propanal-carbamoyloximes of the formula



wherein R_1 represents C_1–C_4 alkyl, C_2–C_4 alkenyl or phenyl and R_2 represents C_1–C_4 alkyl, processes for their production and their use for pest control.

3,835,174
NEW PROPANAL DERIVATIVES

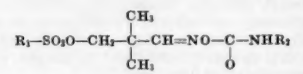
Odd Kristiansen, Reinach/Bl., Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jan. 10, 1973, Ser. No. 322,597

Int. Cl. C07c *131/00*

U.S. Cl. 260—456 A **4 Claims**

2,2-Dimethyl-propanal-carbamoyloximes of the formula



wherein R_1 represents C_1–C_4 alkyl, C_2–C_4 alkenyl or phenyl and R_2 represents C_1–C_4 alkyl, processes for their production and their use for pest control.

3,835,175
9-FLUORENYLMETHANOL HALOFORMATES, CARBONATES AND THIOCARBONATES

Louis A. Carpino, and Grace Y. Han, both of Amherst, Mass., assignors to Research Corporation, New York, N.Y.

Filed Mar. 15, 1971, Ser. No. 124,479

Int. Cl. C07c *69/00, 103/50, 103/52*

U.S. Cl. 260—463 **2 Claims**

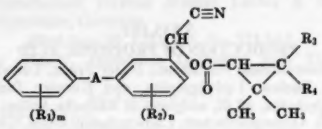
The invention disclosed herein is generally concerned with novel 9-fluorenylmethyloxycarbonyl compounds and their reactions. More particularly, it is concerned with these novel compounds and their utility in the preparation of peptides, especially as blocking reagents for protection of free amino or carboxyl groups in amino acids or peptides. The compounds are also useful for separating racemic mixtures into their optical isomers.

3,835,176
ALPHA-CYANOBENZYL CYCLOPROPANECARBOXYLATES

Takashi Matsuo, Amagasaki; Nobushige Itaya, Ikeda; Yositosi Okuno; Toshio Mizutani, both of Toyonaka; Nobuo Ohno, Ikeda, and Shigeyoshi Kitamura, Toyonaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed June 26, 1972, Ser. No. 266,362
Claims priority, application Japan, June 29, 1971, 46-47808
Int. Cl. C07c *121/66*
U.S. Cl. 260—465 D **7 Claims**

α-Cyanobenzyl cyclopropanecarboxylates of the formula,



wherein A is oxygen atom or methylene group, R_1 and R_2 are respectively hydrogen atom, a halogen atom or a lower alkyl group, R_3 is hydrogen atom or methyl group, R_4 is hydrogen atom, methyl group, phenyl group or

in which R_5 is hydrogen atom or methyl group, and R_6 is hydrogen atom, methyl group, methoxycarbonyl group, or methoxymethyl group, or R_5 and R_6 are combined each other at the ends to form a polymethylene group, provided that R_4 is methyl group when R_3 is methyl group, and *m* and *n* are respectively an integer of 1 to 3, which are useful for controlling insects and mites.

3,835,177
PROCESS FOR THE PREPARATION OF BENZONITRILE

Hartwig C. Bach, Pensacola, Fla., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 92,165, Nov. 23, 1970, Pat. No. 3,719,701. This application Oct. 12, 1972, Ser. No. 297,106
Int. Cl. C07c *121/02*
U.S. Cl. 260—465 R **4 Claims**

Benzonitrile is prepared by the catalytic oxidation of benzylamine in the liquid phase at temperatures between about −5°C. and about 150°C. where molecular oxygen is the oxidant and a cupric ion-nitrogen base complex is the catalyst.

3,835,178
PROCESS FOR THE PRODUCTION OF MIXTURES CONSISTING OF BENZYL CYANIDE AND β-PHENYLETHYLAMINE

Hans-Jurgen Arpe, Fischbach/Taunus, and Ernst Ingo Leupold, Hofheim/Taunus, both of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt/Main, Germany

Filed Oct. 20, 1972, Ser. No. 299,211
Claims priority, application Germany, Oct. 22, 1971, 2152646
Int. Cl. C07c *121/02, 121/52, 87/28*
U.S. Cl. 260—465 R **10 Claims**

Process for the production of mixtures consisting of benzyl cyanide and β-phenylethylamine on the basis of cyclohexylideneacetonitrile in the presence of a two phase catalyst.

3,835,179
NOVEL 15-SUBSTITUTED PROSTANOIC ACIDS AND ESTERS

Robert Eugene Schaub, Upper Saddle River, and Martin Joseph Weiss, Oradell, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed July 24, 1972, Ser. No. 274,558
Int. Cl. C07c *101/30, 101/34*
U.S. Cl. 260—468 D **10 Claims**

This disclosure describes compounds of the class of 15-substituted-9-keto(or 9-hydroxy)prostanoic acids and the esters and cationic salts thereof, useful as inhibitors of gastric acid secretion.

3,835,180
15 ALKOXY PGE COMPOUNDS

Frank H. Lincoln, Jr., Portage; John F. Pike, and Gilbert A. Youngdale, both of Kalamazoo, all of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation of Ser. No. 140,251, May 4, 1971, abandoned. This application Jan. 26, 1973, Ser. No. 327,036
Int. Cl. C07c *61/36, 69/74*
U.S. Cl. 260—468 D **7 Claims**

Prostaglandin-type compounds with an alkoxy group replacing the hydroxyl at the C-15 position are disclosed. These are useful for the same pharmacological purposes as the unsubstituted prostaglandins.

3,835,181
PGA

Philip F. Beal, III, and John E. Pike, both of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 157,713, June 28, 1971, Pat. No. 3,759,965, which is a continuation-in-part of Ser. No. 82,121, Oct. 16, 1970, abandoned, which is a continuation-in-part of Ser. No. 520,876, Jan. 17, 1966, abandoned, which is a continuation-in-part of Ser. No. 480,107, Aug. 16, 1965, abandoned. This application Apr. 4, 1973, Ser. No. 347,783
Int. Cl. C07c *61/36, 69/74*
U.S. Cl. 260—468 D **6 Claims**

This invention is a group of novel prostanoic acid derivatives, namely prostaglandin A_2 (PGA_2), prostaglandin A_3 (PGA_3), and 13,14-dihydroprostaglandin A_1 (13,14-dihydro-PGA_1), and the salts, esters, formates and alkanoates of those. These novel compounds are useful as antisecretory agents, vasodepressors, oxytocic agents, and abortifacients. These novel compounds are also useful to manage cases of renal disfunction and to regulate the menstrual cycle in women.

3,835,182
DEHYDROABIETIC ACID AND ETHYLENE REACTION PRODUCTS

Walter H. Schuller, Lake City, Fla., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Sept. 13, 1972, Ser. No. 288,807
Int. Cl. C07c *63/46*
U.S. Cl. 260—468.5 **4 Claims**

New compositions of matter are prepared by reacting ethylene with dehydroabietic acid (or disproportionated rosin) in the presence of palladium (II) acetate to give mixed dimeric dibasic acids.

3,835,183

SULFONATED AROMATIC PRODUCT AND METHOD OF MANUFACTURING THE SAME

David B. Carpenter, Ashland, Ky., and Jane W. Mittendorf, Fort Lee, N.J., assignors to Ashland Oil, Inc., Ashland, Ky.

Continuation of Ser. No. 696,551, Jan. 9, 1968, abandoned. This application Dec. 13, 1971, Ser. No. 207,676

Int. Cl. C07c *143/74*

U.S. Cl. 260—505 C **8 Claims**

A normally pumpable, sulfonated aromatic product, highly useful as a material for the production of activated carbon, and the method of manufacturing this product, including reacting a highly aromatic hydrocarbonaceous material containing in excess of about 50 percent by volume of aromatic hydrocarbons and preferably in excess of 75 percent aromatic hydrocarbons, such as coal tars and pitches and preferably condensed nuclear hydrocarbons obtained as a bottoms product of the hydrodealkylation of coal tars, catalytically cracked light cycle oils, reformer products, and the like, with a spent alkylation acid, containing at least 50 percent and preferably at least 75 percent by volume of sulfuric acid, preferably obtained as a by-product of the reaction of isoparaffins, such as isobutane and/or isopentane, with an alkylating reactant, particularly an olefin such as propylene, various butylenes, various amylenes and other higher boiling olefins, to produce normally liquid paraffins as high octane blending stock for gasolines, at ambient pressures and at a temperature from ambient temperature to about 275°F and above the melting point of the hydrocarbonaceous feed, where the hydrocarbon feed is a normally semi-solid material at ambient temperatures whereby a sulfonated product is obtained which can be readily handled and shipped at temperatures above 175°F without solidifying; but which will, when carbonized and activated, produce a superior activated carbon material. In one form of the invention, the hydrocarbonaceous aromatic feed material is prepared by subjecting coal or the like to carbonization in the absence of oxygen at a temperature of about 600° to 2400°F and a pressure of about 10 to 100 psig., separating gases and solid coke from a liquid product of the carbonization and thereafter subjecting the liquid to sulfonation as outlined above. The normally pumpable, sulfonated aromatic product of the present invention is also valuable in the production of activated carbon pellets or briquettes by mixing ground carbonaceous materials such as coal, lignite, nutshells, fruit pits, wood and charcoal, etc. with the sulfonated aromatic product of the present invention and thereafter carbonizing and activating the formed pellets or briquettes.

3,835,184

FORMAMIDE DERIVATIVES

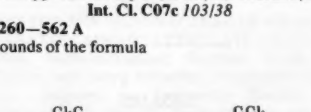
Walter Ost; Klaus Thomas, and Dietrich Jerchel, all of Ingelheim/Rhine, Germany, assignors to C. H. Boehringer Sohn, Ingelheim/Rhein, Germany

Division of Ser. No. 55,270, July 15, 1970, Pat. No. 3,702,344. This application May 23, 1972, Ser. No. 256,115

Int. Cl. C07c *103/38*

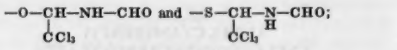
U.S. Cl. 260—562 A **5 Claims**

Compounds of the formula



wherein X and Y are each oxygen, sulfur, —SO— or —SO_2—; and A is

a. straight or branched alkylene of 2 to 10 carbon atoms, whose carbon chain is interrupted by phenylene, or by phenylene having substituents attached thereto, said substituents being selected from the group consisting of 1 to 2 chlorine or bromine atoms, or



or

b. phenylene, or phenylene having 1 to 4 halogen, 1 to 2 lower alkyl or 1 to 2 lower alkoxy substituents attached thereto;

the compounds are useful as biocidal agents, especially as systemic fungicidal agents against all types of phytopathogenic fungi, such as mildew, plant rust and Fusaria.

3,835,185

PRODUCTION OF PROPIONIC ACID

Heinz Hohenschutz, Mannheim; Dieter Franz, Ludwigshafen; Horst Buelow, Ludwigshafen, and Guenter Dinkhauser, Ludwigshafen, all of, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhine, Germany

Filed June 26, 1972, Ser. No. 266,262

Int. Cl. C07c *51/14*, *53/22*

U.S. Cl. 260—533 A **6 Claims**

A process for the production of propionic acid which comprises the reaction of ethylene with carbon monoxide and water in the presence of a nickel carbonyl complex at a temperature of from 250° to 320°C in the liquid phase and at a pressure of from 100 to 300 atmospheres in a vertical cylindrical reaction zone, a gaseous zone being maintained at the upper end of the reaction zone and a bottom zone being maintained at the lower end of the reaction zone which is not in communication with said reaction zone over the entire cross section.

3,835,186

PROCESS FOR PREPARATION OF AROMATIC CARBOXYLIC ACID CHLORIDE

Kazutoshi Funabashi, and Kanji Harada, both of Tokyo, Japan, assignors to Teigjin Limited, Osaka, Japan

Filed Mar. 6, 1973, Ser. No. 338,422

Int. Cl. C07c *63/14*

U.S. Cl. 260—544 M **9 Claims**

A process for the preparation of aromatic acid chlorides characterized by reacting a polyester comprising an aromatic dibasic acid as the main acid component with at least one kind of trichloromethylbenzene selected from the group consisting of benzene having at least one trichloromethyl radical and benzene having at least one trichloromethyl radical and at least one nucleus-substituted chlorine atom in the presence of at least one catalyst selected from the group consisting of iron, aluminum, their oxides, their sulphides and their salts to produce an acid chloride of said aromatic dibasic acid and an aromatic acid chloride formed by conversion of all the trichloromethyl radicals in said trichloromethylbenzene to chlorocarbonyl radicals.

3,835,187

PROCESS FOR PREPARING AROMATIC ACID CHLORIDES

Ian Fraser Dyson, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 11, 1972, Ser. No. 225,617

Int. Cl. C07c *63/14*

U.S. Cl. 260—544 M **12 Claims**

Aromatic acid chlorides can be prepared in high quality and yield by a process comprising (1) reacting an aromatic compound bearing at least one trichloromethyl group with more than 1 and up to 1.25 molar equivalents of water or a lower monohydric alcohol per trichloromethyl group to convert the aromatic compound to an intermediate reaction product in

which all trichloromethyl groups are converted to carbonyl-containing groups and (2) reacting the intermediate product from (1) with an aromatic compound bearing at least one trichloromethyl group in an amount which provides up to just enough CCl_3 groups to reconvert the carbonyl-containing groups other than COCl to COCl groups.

3,835,188

BENZENESULFONYL-UREAS AND PROCESS FOR THEIR PREPARATION

Rudi Weyer, Frankfurt/Main; Volker Hitzel, Lorsbach/Taunus; Walter Aumuller, Kelkheim/Taunus, and Ruth Heerdt, Mannheim, all of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt/Main, Germany

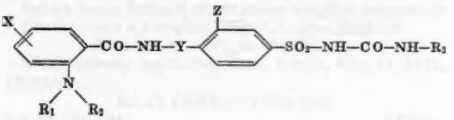
Filed June 20, 1973, Ser. No. 371,663

Claims priority, application Germany, June 22, 1972, 2230543

Int. Cl. C07c *127/12*

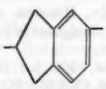
U.S. Cl. 260—553 DA **6 Claims**

Sulfonyl-ureas of the formula



in which

X represents hydrogen, chlorine, bromine, methoxy or methyl, Y represents $-CH(CH_3)-CH_2-$, $-CH_2-CH(CH_3)-$or preferably $-CH_2-CH_2-$, Z represents hydrogen or together with Y and the phenylene radical the radical



R_1 represents hydrogen, lower molecular alkyl, acyl, phenyl, R_2 is hydrogen, lower molecular alkyl, R_3 is alkyl having 3 to 6 carbon atoms, cycloalkyl, alkylcycloalkyl, cycloalkylalkyl, cycloalkenyl, alkylcycloalkenyl having each 5 to 9 carbon atoms, cyclohexenylmethyl, chlorocyclohexyl, bicycloheptenylmethyl, bicycloheptylmethyl, bicycloheptenyl, bicycloheptyl, nortricyclyl, adamantyl, benzyl, phenylethyl, which as substance or in the form of their salts have pypoglycemic properties and which are distinguished by a strong and continuous lowering of the blood sugar level; processes for preparing them as well as pharmaceutical preparations containing the sulfonyl-ureas as an active substance.

3,835,189

N-ALKYL-N-SEC. BUTYLBENZAMIDES

Emilio Arsura, S. Donato Milanese; Agostino Baruffini; Franco Gialdi, both of Pavia; Giovanni Pellegrini, Milan; Riccardo Ponci, Pavia, and Pietro Scrivani, Milan, all of Italy, assignors to Montedison S.p.A., Milan, Italy

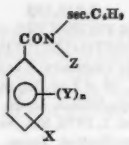
Filed Nov. 8, 1968, Ser. No. 774,475

Claims priority, application Italy, Nov. 9, 1967, 22494/67; Oct. 8, 1968, 22207/68

Int. Cl. C07c *103/22*

U.S. Cl. 260—558 D **10 Claims**

Described are compounds of the formula:



wherein:

X = Cl, Br, I, CH_3;

Y = H, Cl, Br, I, F, CH_3;

$n = 1$ or 2,

Z = alkyl having from 1 to 5 carbon atoms, for $n = 2$, X and Y CH_3. These compounds are useful as selective herbicides.

3,835,190

CHEMICAL COMPOUND, N, N'-DIBENZYLETHYLENEDIAMINODIMETHYLTETRA CYCLINE

Elena Nikolaevna Lazareva, Nakhimovsky prospect, 1, korp. 1, kv. 72; Olga Petrovna Belozerova, Prospekt Mira, 124, korp. 15, kv. 72; Tamara Ivanovna Efimova, 1 Nikolo-Schepovsky per., 6, kv. 10; Ljudmila Vladimirovna Sitnikova, Ul. Tekhachevskogo, 32, kv. 48, and Alexandra Pavlovna Krjuchkova, Avtomotornaya ul., 4, kv. 42, all of Moscow, U.S.S.R.

Filed Oct. 31, 1968, Ser. No. 772,410

Int. Cl. C07c *103/19*

U.S. Cl. 260—559 **1 Claim**

A compound, N, N'-dibenzylethylenediaminodimethylditetracycline is prepared by reacting tetracycline base with formaldehyde and N, N'-dibenzylethylenediamine with heating in an organic solvent. The instant compound is the active ingredient for a medical preparation used in the treatment of trachoma, infectious conjunctivities and other infectious eye diseases.

3,835,191

ALDIMINES AND KETIMINES CONTAINING HYDROXYMETHYL GROUPS AND PREPARATION THEREOF

Kuno Wagner, and Manfred Hajek, both of Leverkusen, Germany, assignors to Bayer Aktiengesellschaft

Filed Nov. 26, 1969, Ser. No. 880,420

Claims priority, application Germany, Dec. 14, 1968, 1814832

Int. Cl. C07c *119/00*

U.S. Cl. 260—566 R **11 Claims**

Novel aldimines and ketimines which contain hydroxy methyl groups are provided. These new compounds are prepared by reacting Schiff's bases which have active hydrogen atoms in α-position to the C=N–group with formaldehyde or formaldehyde yielding compounds. The new compounds can, e.g., be used as plasticizing chain lengthening agents for the preparation of polyurethane plastics.

3,835,192

PRECURSOR OF SESQUITERPINE DERIVATIVES OF THE EREMOPHILANE GROUP

Leendert Maarten Van Der Linde, Huizen; Jan Gerardus Witteveen, Naarden, and Harmannus Boelens, Huizen, all of Netherlands, assignors to N. V. Chemische Fabriek Naarden

Filed June 21, 1971, Ser. No. 154,960

Claims priority, application Netherlands, June 19, 1970, 7009040

Int. Cl. C07c *49/44*

U.S. Cl. 260—586 R **1 Claim**

Sesquiterpene derivatives of the eremophilane group e.g., a-vetivone and nootkatone which are useful aroma chemicals are prepared from 5,6-dimethyl-8-isopropyl-tricyclo [4.4.0.$0^{8,10}$] 1-decene-3-one.

3,835,193
PROCESS FOR PRODUCING ACROLEIN OR METHACROLEIN

Keisho Yamada; Sumio Umemura; Kyoji Odan; Mikio Hidaka, and Kazuo Eukuda, all of Ube, Japan, assignors to UBE Industries Ltd., Yamaguchioken, Japan

Filed Dec. 1, 1970, Ser. No. 94,214

Claims priority, application Japan, Dec. 23, 1969, 44-103003

Int. Cl. C07c *45/02*

U.S. Cl. 260—604 R **4 Claims**

A process for the production of acrolein or methacrolein in which propylene or isobutylene is contacted with oxygen or oxygen-containing gas in a vapor phase in the presence of a specified catalyst. The catalyst comprises (a) bismuth antimonate and (b) at least one molybdic acid salt of the following metals; barium, silver, zinc, cadmium, calcium and lead.

3,835,194
PROCESS FOR THE PREPARATION OF TETRAKIS (HYDROXYMETHYL) PHOSPHONIUM OXALATE

Julian Jacob Leavitt, Plainfield, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Oct. 18, 1973, Ser. No. 407,709

Int. Cl. C07f *9/28*

U.S. Cl. 260—606.5 F **3 Claims**

Tetrakis(hydroxymethyl)phosphonium oxalate is prepared by reacting formaldehyde with phosphine and oxalic acid with vigorous agitation without the use of a catalyst. The product is useful as a flame retardant for cellulose fabrics.

3,835,195
ETHER SULPHONES

Albert Menet, La Mulatiere, France, assignor to Rhone-Poulenc S.A., Paris, France

Filed Feb. 1, 1973, Ser. No. 328,611

Claims priority, application France, Feb. 2, 1972, 72.3484

Int. Cl. C07c *147/04, 147/06*

U.S. Cl. 260—607 A **4 Claims**

Sulphones of formula $RSO_2CH_2—C(CH_3)=CH—CH_2OR_1$ I and $RSO_2CH_2—CH=C(CH_3)—CH_2OR_1$ II wherein R and R_1 are optionally substituted alkyl or aryl, are intermediates in the preparation of compounds with a saturated or unsaturated isoprene chain.

3,835,196
PROCESS FOR PREPARING THIOBISPHENOLS

Tamotsu Fujisawa; Takakazu Kojima, and Kazumi Hata, all of Tokyo, Japan, assignors to Sagami Chemical Research Center, Tokyo, Japan

Continuation of Ser. No. 85,767, Oct. 30, 1970, abandoned. This application Nov. 7, 1972, Ser. No. 304,470

Claims priority, application Japan, Nov. 12, 1969, 44-90073

Int. Cl. C07c *149/36, 149/38*

U.S. Cl. 260—608 **5 Claims**

A new process for the production of 4,4′-mono- and/or poly-thiobis(2,6-dialkylphenol) is described. 2,6-Dialkylphenol reacts with sulfur powder in the presence of an alkali hydroxide or alkali metal in a solvent under heating. The process yields 4,4′-mono- and/or poly-thiobis(2,6-dialkylphenol) economically and in a high yield. These compounds are useful as an antioxidants.

3,835,197
PREPARATION OF POLYCYCLIC COMPOUNDS

Herman S. Bloch, Skokie, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Nov. 29, 1972, Ser. No. 310,498

Int. Cl. C07c *13/28*

U.S. Cl. 260—666 PY **10 Claims**

Polycyclic dienic compounds may be prepared by the thermal reaction of a conjugated cyclic diene such as 1,3-cyclopentadiene with a non-conjugated cyclic diene such as 1,4-cyclohexadiene.

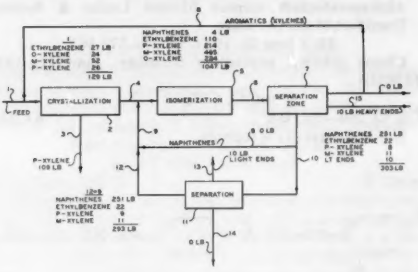
3,835,198
PRODUCTION OF PARAXYLENE

John W. Myers, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 29, 1968, Ser. No. 756,144

Int. Cl. C07c *7/02, 15/08*

U.S. Cl. 260—674 A **10 Claims**



Improved separation and a high yield of p-xylene from a p-xylene-containing isomerizate by fractional crystallization are obtained by removing napthenes, and optionally paraffins and light and heavy ends, from the isomerizate, and recycling the naphthenes to the isomerization zone.

3,835,199
DEHYDROGENATION PROCESS AND CATALYST

Andrew K. Schwartz, Jr., Houston, and Tony Rabago, Jr., Pearland, both of Tex., assignors to Petro-Tex Chemical Corporation, Houston, Tex.

Filed Apr. 24, 1972, Ser. No. 246,683

Int. Cl. C07c *3/28*

U.S. Cl. 260—683.3 **7 Claims**

An improved dehydrogenation process for the production of diolefins by the dehydrogenation of aliphatic hydrocarbons by contacting the hydrocarbon compound with a catalyst containing chromic oxide, alumina, and a sulfur containing compound such as sulfuric acid and sulfates of zinc magnesium and cobalt.

3,835,200
COMPOSITION OF A POLYPHENYLENE ETHER, A RUBBER STYRENE GRAFT COPOLYMER AND NORMALLY RIGID BLOCK COPOLYMER OF A VINYL AROMATIC COMPOUND AND A CONJUGATED DIENE

Gim F. Lee, Jr., Albany, N.Y., assignor to General Electric Company, Pittsfield, Mass.

Filed Aug. 23, 1972, Ser. No. 283,092

Int. Cl. C08g *15/00;* **C08f** *19/00*

U.S. Cl. 260—876 B **12 Claims**

There are provided compositions comprising a polyphenylene ether, a graft copolymer of a diene rubber with a styrene monomer and a normally rigid block copolymer of a vinyl aromatic compound and a conjugated diene. The addition of the normally rigid block copolymer resin to polyphenylene ethers in combination with graft copolymers of a diene rubber and a styrene monomer provides unexpected improvements in toughness in parts molded from the composition. Such properties are improved without substantially impairing glass or surface appearance.

3,835,201
THERMOPLASTIC BLEND OF COPOLYMER RUBBER AND POLYOLEFIN PLASTIC

William K. Fischer, Woodbury, Conn., assignor to Uniroyal, Inc., New York, N.Y.

Filed Aug. 29, 1972, Ser. No. 284,521
Int. Cl. C08f 37/18
U.S. Cl. 260—897 A 21 Claims

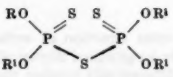
A blend having the properties of a thermoplastic elastomer, including low permanent set, is provided by blending (A) a monoolefin copolymer rubber (e.g., 80 parts of EPM or EPDM) having high zero shear viscosity, with (B) a polyolefin resin (e.g., 20 parts of polypropylene). The blend is useful for making molded or extruded articles (e.g., gaskets, hose) which have good physical properties without requiring vulcanization.

3,835,202
TRITHIOPYROPHOSPHATES

John Scotchford Elliott; Gerald John Joseph Jayne, and Patrick James Folliard, all of London, England, assignors to Edwin Cooper & Company Limited, London, England

Filed May 11, 1972, Ser. No. 252,254
Claims priority, application Great Britain, May 12, 1971, 14496/71
Int. Cl. C07f 9/16; C10m 1/48
U.S. Cl. 260—933 8 Claims

A process for preparing a trithiopyrophosphate or mixture thereof of the general formula:



wherein R is a primary alkyl group and each R^1 is the same or different and is a primary alkyl group, an aryl group, an alkaryl group or an aralkyl group, comprises heating a dithiophosphoric acid at a temperature of at least 120°C. until the acid value has fallen to a level of from 10 to 70 mg.KOH/g. and thereafter neutralising the reaction mixture. Also described are lubricating compositions containing the trithiopyrophosphates as antioxidants and load-carrying additives.

3,835,203
PHOSPHORIC-CARBOXYLIC ACID ANHYDRIDES

Leonard S. Silbert, and Dolores A. Konen, all of Philadelphia, Pa., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

No Drawing. Division of Ser. No. 88,490, Nov. 10, 1970,. This application June 29, 1972, Ser. No. 267,315
Int. Cl. C07f 9/08
U.S. Cl. 260—935 6 Claims

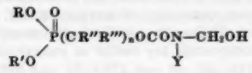
Peroxy acids are prepared by perhydrolysis with highly concentrated hydrogen peroxide of a mixed anhydride of an appropriate carboxylic acid such as a diethyl phosphoric-carboxylic acid anhydride. Although perhydrolysis is usually effected by catalysis with methanesulfonic acid, catalysis was not required in at least one case. Both aliphatic and aromatic peroxy acids containing either electron-donating or electron-accepting groups can be prepared indicating that the process of the invention is general in scope and is utilizable with compounds having a broad range of carbon chain lengths. Yields of peroxy acids above 70 percent are easily obtained.

3,835,204
HYDROXYALKYLPHOSPHONATE CARBAMATES

Edward D. Weil, Hastings-on-Hudson, N.Y., assignor to Stauffer Chemical Company, New York, N.Y.

Filed June 28, 1971, Ser. No. 157,699
Int. Cl. C07f 9/40
U.S. Cl. 260—938 3 Claims

The present invention provides a process for flame retarding textiles, paper and other flammable, solid substrates by applying to the substrate at least one novel hydroxyalkylphosphonate carbamate corresponding to the formula:



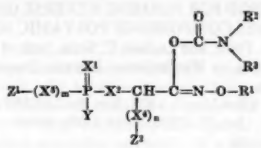
where n is an integer having a value of from 1 to about 4, R and R′ can be the same or different and are selected from the group consisting of C_1–C_4 alkyl, allyl and haloalkyl groups, Y is H or CH_2OH and R″ and R‴ can be the same or different and are selected from the group consisting of H and C_1–C_4 alkyl groups, whereupon the thus applied carbamate is cured so as to form an insoluble, fire retardant finish.

3,835,205
ALKOXYIMINO CARBAMOYLOXY PHOSPHORUS COMPOUNDS

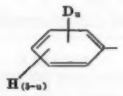
Leonard J. Stach, Riverside, Ill., assignor to Velsicol Chemical Corporation, Chicago, Ill.

Filed Dec. 1, 1972, Ser. No. 311,079
Int. Cl. A01n 9/36; C07f 9/16, 9/40
U.S. Cl. 260—938 6 Claims

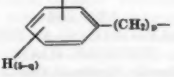
This invention discloses new compounds of the formula



wherein R^1 is alkyl; R^2 is selected from the group consisting of hydrogen, alkyl, alkenyl, haloalkyl and cycloalkyl; R^3 is selected from the group consisting of hydrogen, alkyl, alkenyl, haloalkyl, cycloalkyl and

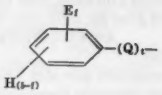


wherein D is selected from the group consisting of alkyl, alkenyl, alkoxy, alkylthio, halogen, haloalkyl, nitro and dialkylamino; and u is an integer from 0 to 3; X^1, X^2, X^3 and X^4 are independently selected from the group consisting of oxygen and sulfur; m and n are each integers from 0 to 1; Z^1 is selected from the group consisting of alkyl, alkenyl and



wherein A is selected from the group consisting of alkyl, alkenyl, alkoxy, alkylthio, haloalkyl, halogen, nitro, alkylsulfoxide, alkylsulfone and dialkylamino; and q and p are each integers from 0 to 3; Z^2 is selected fro the group consisting of hydrogen and Z^1, provided that when Z^2 is hydrogen then n is zero; and

Y is selected from the group consisting of alkyl alkenyl, alkoxy, alkenyloxy, alkylthio, amino, alkylamino, dialkylamino and



wherein E is selcted from the group consisting of alkyl, alkenyl, alkoxy, alkylthio, halogen, nitro, alkylsulfoxide, alkylsulfone and dialkylamino; *f* is an integer from 0 to 3; Q is selected from the group consisting of oxygen, sulfur, alkylene, alkyleneoxy and alkylenethio; and *t* is an integer from 0 to 1. The above compounds are useful as insecticides and acaricides.

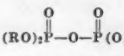
3,835,206

PROCESS FOR HYDROLYZING PYROPHOSPHATES

Philip M. Pivawer, Hamden, Conn., assignor to Olin Corporation, New Haven, Conn.

Filed Dec. 20, 1972, Ser. No. 316,854
Int. Cl. C07f 9/08
U.S. Cl. 260—983 **12 Claims**

The use of a tertiary amine to speed up the hydrolysis of pyrophosphates of the formula



wherein R is an alkyl or haloalkyl radical.

3,835,207

A METHOD FOR FORMING REVERSE OSMOSIS MEMBRANES COMPOSED OF POLYAMIC ACID SALTS

Lawrence W. Frost, and Luciano C. Scala, both of Murrysville, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 3, 1972, Ser. No. 249,997
Int. Cl. B29d 27/04; C08g 20/40
U.S. Cl. 264—41 **28 Claims**

A polymeric membrane is prepared by reacting a suitable derivative of a tri or tetracarboxylic acid with a diamine to form a polyamic acid, forming a film from the polyamic acid, imidizing the polyamic acid film to form a polyamide-imide film, treating the polyamide-imide film to open the imide rings, to form a permselective membrane comprising water insoluble polyamic acid salt polymers.

3,835,208

METHOD FOR PRODUCING AN INTEGRAL SKIN · PHENOLIC FOAM

Serge Iginai Koutitonsky, Montreal, Quebec, Canada, assignor to Esso Research and Engineering Company, Linden, N.J.

Filed June 9, 1972, Ser. No. 261,418
Int. Cl. B29d 27/04
U.S. Cl. 264—45 **6 Claims**

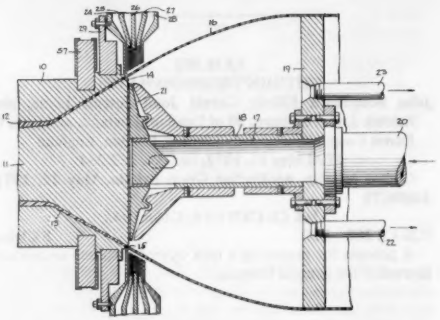
A phenolic foam element having an integral skin of hard, unfoamed thermoset resin is prepared by foaming and curing a phenol aldehyde resin between mold confining members coated with a surface active agent in an amount sufficient that the resin in contact with the mold during foaming collapses, thereby forming the skin. This integral skin protects the foam against abrasion and indentation and eliminates the need for protective coatings, of paper, and the like, on the foam.

3,835,209

PROCESS OF EXTRUDING A FOAMED EXTRUDATE AND CONTROLLING THE THICKNESS THEREOF

James A. Karabedian, Garden City, N.Y., assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Nov. 9, 1971, Ser. No. 197,131
Int. Cl. B29c 25/00; B29d 27/00, 23/04
U.S. Cl. 264—51 **6 Claims**



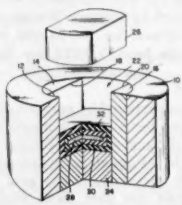
Caliper in the cross direction of webs of extruded foam plastic produced by longitudinal slitting of a tubular extrusion is controlled by differentially cooling the extrusion circumferentially about its axis as it is extruded. This can be accomplished by locating a plurality of independently controllable air cooling ducts around and following the die orifice.

3,835,210

METHOD OF FORMING POWDER COMPACTS

Milton E. Kirkpatrick, Palos Verdes Peninsula, and Ralph A. Mendelson, Westminster, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Continuation of Ser. No. 167,614, July 30, 1971, abandoned, which is a division of Ser. No. 848,641, Aug. 8, 1969, Pat. No. 3,650,646, which is a division of Ser. No. 707,813, Feb. 23, 1968, Pat. No. 3,496,425, which is a continuation-in-part of Ser. No. 509,970, Nov. 26, 1965, abandoned. This application Apr. 16, 1973, Ser. No. 351,485
Int. Cl. C04b 35/00
U.S. Cl. 264—61 **5 Claims**



A mass of powder particles is enclosed within a soft elastomeric container and placed in a die cavity with a hard elastomeric sealing member placed between the soft

elastomeric container and a movable die punch. Pressure applied to the die is transmitted substantially isostatically by the soft elastomeric container to the powder particles, while the hard elastomeric member provides a seal for preventing extrusion of the soft elastomeric material.

3,835,211

SILICON NITRIDE PRODUCTS

Roger Frank Coe, and Roland John Lumby, both of Birmingham, England, assignors to Joseph Lucas (Industries) Limited, Birmingham, England

Continuation-in-part of Ser. No. 868,237, Oct. 21, 1969, abandoned. This application Apr. 6, 1972, Ser. No. 241,750

Claims priority, application Great Britain, Dec. 11, 1968, 58885/68

Int. Cl. C04b *35/58*; **C01b** *21/06*

U.S. Cl. 264—66 **4 Claims**

A method of manufacturing silicon nitride products is of the kind in which silicon nitride powder is pressed at an elevated temperature to form the product, the pressing being continued until the product is fully densified. The method is characterised in that the fully densified product is then heated further at a temperature sufficient to convert α-phase silicon nitride to β-phase silicon nitride.

3,835,212

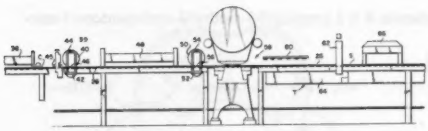
METHOD FOR PRODUCING RESINOUS SHEET-LIKE PRODUCTS

Anthony N. Piacente, Lawrenceville, N.J., assignor to Congoleum Industries, Inc., Kearny, N.J.

Division of Ser. No. 40,269, May 25, 1970, Pat. No. 3,700,366. This application Oct. 29, 1971, Ser. No. 194,010

Int. Cl. B29d *7/14*

U.S. Cl. 264—76 **2 Claims**



A method for continuously molding a resinous sheet-like product which comprises feeding a mono-layer of plastic chips onto a preheated endless, polished, smooth surface belt. The chips are deposited on the belt from a vibrator feeder in substantially abutting contact and are laterally compacted. The chips and belt are further heated to cause the chips to adhere to the belt and the belt and chips are passed through the nip of a pair of compression rolls so as to consolidate the chips into a sheet. The sheet is further heated, calendared and burnished subsequently stripped from the belt and cut into tiles.

3,835,213

CO-EXTRACTION AND SEPARATE RECOVERY OF URANIUM AND THORIUM FROM ACID SOLUTIONS

Gordon Malcolm Ritcey, and Bernard Henry Lucas, both of Ottawa, Ontario, Canada, assignors to Canadian Patents and Development Limited, Ottawa, Ontario, Canada

Filed Oct. 1, 1971, Ser. No. 185,578

Int. Cl. B01d *11/00*; **C01g** *56/00*

U.S. Cl. 423—9 **4 Claims**

A process is described for separating uranium and thorium from an aqueous acid solution containing them together with rare earth elements. The process comprises contacting the solution with a water-immiscible organic solution of a high molecular weight primary or secondary amine whereby the uranium and thorium values are co-extracted and separating the resulting uranium and thorium loaded amine solution from the aqueous solution. The uranium and thorium are then easily separated from the loaded amine solution either by selective stripping or co-stripping and selective extraction.

3,835,214

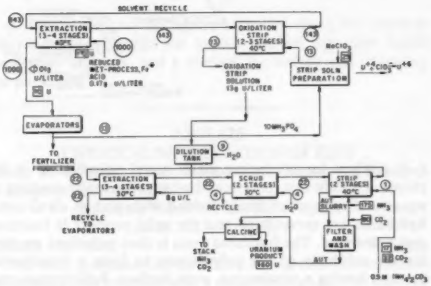
OXIDATIVE STRIPPING PROCESS FOR THE RECOVERY OF URANIUM FROM WET-PROCESS PHOSPHORIC ACID

Fred J. Hurst, and David J. Crouse, both of Oak Ridge, Tenn., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Aug. 15, 1972, Ser. No. 280,922

Int. Cl. B01d *11/00*; **C01g** *56/00*

U.S. Cl. 423—10 **1 Claim**



A process for the recovery of uranium from a wet-process type phosphoric acid solution is effected by adjusting said solution with sufficient ferrous ion to insure that the uranium is in the uranous form, contacting the adjusted solution with an organic phase consisting essentially of a mono and disubstituted phenyl ester of orthophosphoric acid dissolved in an inert diluent to effect transfer of the uranium into the organic phase, stripping the uranium from the organic phase with a 6–12 M phosphoric acid solution containing an oxidizing agent to produce a uranyl phosphate strip solution more highly concentrated in uranium than the wet-process feed solution.

3,835,215

MANUFACTURE OF PHOSPHORIC ACID

Byron Marquis, Old Greenwich, Conn., and Robert Somerville, Neshanic, N.J., assignors to Singmaster & Breyer, New York, N.Y.

Continuation of Ser. No. 812,648, April 2, 1969, abandoned. This application Sept. 18, 1972, Ser. No. 289,795

Int. Cl. C01f *1/00*; **C22b** *3/00*; **C01f** *5/00*, *11/00*; **C22b** *29/00*

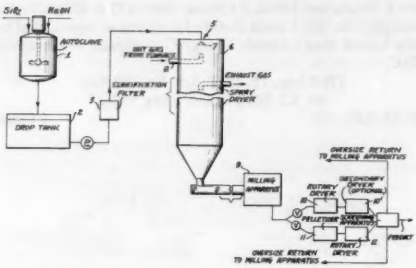
U.S. Cl. 423—167 **1 Claim**

A process for producing phosphoric acid from phosphate ore by multi-stage digestion of disintegrated ore with sulfuric acid and phosphoric acid, is shown. The sulfuric acid is added to weak phosphoric acid recycled in the process and the mixture is cooled in a first vacuum cooler before it enters the rock digestion zone. Conditions are maintained which favor formation of large rhombic crystals of gypsum over other forms of calcium sulfate. The slurry formed is circulated to maintain a substantially uniform temperature with less than 5°C temperature drop at the surface of a second evaporation cooler. The formed crystals are separated and washed and at least a part of the resulting weak phosphoric acid is recycled.

3,835,216
METHODS FOR PRODUCTION OF ALKALI METAL POLYSILICATES

Guillermo Almagro, Aberdeen; Orlando L. Bertorelli; Robert K. Mays, both of Havre de Grace; Lloyd E. Williams, Bel Air, all of Md., and Howard F. Zimmerman, Jr., Athens, Tenn., assignors to J. M. Huber Corporation, Locust, N.J.

Filed Oct. 28, 1971, Ser. No. 193,471
Int. Cl. C01b 33/32
U.S. Cl. 423—332 3 Claims



A method for producing alkali metal polysilicates is disclosed. Polysilicates, produced by hydrothermally reacting an aqueous dispersion of finely divided silica and an alkali metal hydroxide are spray dried and the solid product is fractured and pulverized. The fractured mass is then pelletized employing the solubility of the polysilicates to form a free-flowing product having a continuous, even surface. Pelletization may be effected with or without the use of water and/or binders.

3,835,217
PROCESS FOR THE RECOVERY OR DISSOLVED MERCURY SALTS FROM AQUEOUS SOLUTIONS

Lyle H. Dunsmoor, Point Pleasant, W. Va., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 105,959, Dec. 21, 1970, abandoned. This application June 1, 1972, Ser. No. 258,741
Int. Cl. C01d 3/16
U.S. Cl. 423—499 4 Claims

A process for the recovery of mercury sulfide from an aqueous solution comprising intermixing with said solution a flocculating compound of the formula:

Rn Xy

wherein R is a metal selected from magnesium, manganese, cobalt, nickel, copper, zinc, cadmium, aluminum and calcium, and X is an anion and *n* and *y* are integers sufficient to satisfy the valence requirements; preferably at a solution pH of at least about 7 and a temperature of at least about 150°F. for a time sufficient such that preferably less than 25 parts per billion mercury is left in solution.

3,835,218
CATALYTIC DECOMPOSITION OF AMMONIUM BISULFATE TO FORM AMMONIUM AND SULFUR DIOXIDE BISULFITE

Charles B. Root, Morristown, N.J., assignor to Allied Chemical Corporation, New York, N.Y.

Filed Aug. 12, 1971, Ser. No. 176,388
Int. Cl. C01b 17/50; C01c 1/22
U.S. Cl. 423—519 6 Claims

A process for recovering ammonium bisulfite and sulfur dioxide from ammonium bisulfate by heating in the presence of specific catalysts.

3,835,219
METHOD FOR THE PREPARATION OF FIBROUS SOLUBLE CALCIUM SULFATE ANHYDRITE

Karlis L. Jaunarajs, Somerville, and Julie C. Yang, Somerset, both of N.J., assignors to Johns Manville Corporation, New York, N.Y.

Filed Aug. 16, 1972, Ser. No. 281,268
Int. Cl. C01f 11/46
U.S. Cl. 423—555 5 Claims

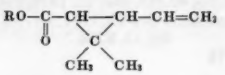
A process is described for the formation of fibrous soluble calcium sulfate anhydrite, the fibers thereof having specified dimensions. In the process an aqueous suspension of gypsum is first formed and converted to the fibrous soluble anhydrite by reaction in the presence of saturated steam at 140°C to 200°C for up to 3.0 hours.

3,835,220
INSECTICIDAL COMPOSITION COMPRISING VINYLCYCLOPROPANECARBOXYLATES

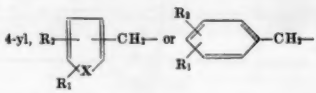
Masanao Matsui, Tokyo, and Yositosi Okuno, Toyonaka, both of Japan, assignors to Sumitomo Chemical Company Limited, Osaka, Japan

Division of Ser. No. 124,951, March 16, 1971, Pat. No. 3,758,504. This application Apr. 23, 1973, Ser. No. 353,358
Claims priority, application Japan, Mar. 19, 1970, 45-23731
Int. Cl. A01n 9/12, 9/28, 17/04
U.S. Cl. 424—17 3 Claims

Vinylcyclopropanecarboxylates having an excellent insecticidal activity and a property harmless to mammals and cattle, of the formula,



wherein R is 2-propargyl-3-methyl-2-cyclopentene-1-one-



wherein R_1 is allyl, propargyl, benzyl, thenyl, furylmethyl or phenoxy, R_2 is hydrogen, or R_1 and R_2 are bonded at respective ends to form a polymethylene group having 3 to 4 carbon atoms, and X is oxygen or sulfur.

3,835,221
ORALLY ADMINISTRABLE DRUG DOSAGE FORM HAVING DELAYED ACTION

Werner Fulberth, Kelkheim, Taunus, and Erika Neitzer, Frankfurt am Main, both of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt/Main, Germany

Filed Mar. 4, 1971, Ser. No. 121,173
Claims priority, application Germany, Mar. 5, 1970, 2010416
Int. Cl. A61k 27/12
U.S. Cl. 424—20 6 Claims

Process for the manufacture of an orally administrable, delayed-action drug dosage form having the form of small globules which are provided with a release-delaying coating, wherein the active substance is applied onto small inert, essentially round globules, the globules so coated are provided with a release-delaying coating which is suitable as dialysis membrane and which contains as film former polyvinyl acetate, preferably in admixture with ethyl cellulose, and filling the globules so obtained in dosage units.

3,835,222

PROCESS FOR PRODUCING POTATO CHIPS

Lawrence W. Wisdom, and Barney W. Hilton, both of Dallas, Tex., assignors to Frito-Lay, Inc., Dallas, Tex.

Filed Sept. 18, 1968, Ser. No. 760,736
Int. Cl. A23l *1/12*
U.S. Cl. 426—49 9 Claims

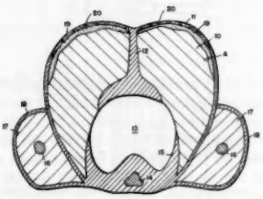
Fried chips comprising potato solids are made by blanching pieces of raw potatoes containing in excess of 0.2 percent reducing sugar to gel starch contained therein, drying said pieces to a moisture content of about 25 to 60 percent forming a dough comrpising at least about 60 percent by weight of potato solids from said pieces, mixing said dough with yeast and allowing said mixture to ferment for a time sufficient to lower the sugar content below about 0.27 percent by weight of original raw potatoes, forming said dough into chips, drying said chips to a moisture content of from 6–20 percent by weight and frying said chips.

3,835,223

SELF-BASTING POULTRY PRODUCT AND METHOD OF PREPARATION

Donald V. Schwall, Glen Ellyn; Alan B. Rogers, Palos Park, both of Ill., and Dennis Corbin, Evansville, Ill., assignors to Armour and Company, Chicago, Ill.

Continuation of Ser. No. 13,478, Feb. 24, 1970, abandoned, which is a continuation-in-part of Ser. No. 740,874, June 28, 1968, Pat. No. 3,528,820, which is a continuation-in-part of Ser. No. 685,074, Nov. 22, 1967, Pat. No. 3,563,763, which is a continuation-in-part of Ser. No. 573,305, Nov. 18, 1966, Pat. No. 3,366,491, which is a continuation-in-part of Ser. No. 492,319, Oct. 1, 1965, abandoned. This application Dec. 21, 1972, Ser. No. 317,299
Int. Cl. A22c *21/00*
U.S. Cl. 426—92 4 Claims



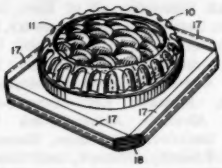
Edible fat for basting the skin of poultry during cooking is injected over the breast muscle of a dressed raw poultry carcass through a hollow needle which is moved under the skin to distribute fat across the breast muscle.

3,835,224

TEAR STRIP SEALING STRUCTURE FOR BLISTER PACKAGES

Leo Peters, 750 Plymouth Rd. S.E., Grand Rapids, Mich. 49506

Filed Mar. 20, 1972, Ser. No. 236,463
Int. Cl. B65b *25/06*; B65d *83/00*
U.S. Cl. 426—130 3 Claims



A blister-type package having extended edges that serve as tear-opening guidelines for outside-applied tape that bonds said edges together, and a method for sealing and unsealing the packages.

3,835,225

CHEMICAL MODIFICATION OF RICE

James E. Rutledge, Baton Rouge, La., assignor to Research Corporation, New York, N.Y.

Filed July 20, 1972, Ser. No. 273,533
Int. Cl. A23l *1/10*, *3/34*
U.S. Cl. 426—208 7 Claims

The heat processability of edible rice grains are enhanced by treating the rice grain with a cross-linking agent of the type capable of cross-linking starch, and then subjecting the rice grain to cross-linking conditions for a time sufficient to enhance the heat resistance and improve the swelling properties of the grain.

3,835,226

PRODUCTION OF EDIBLE GRANULES

Walter Rostagno, Corseaux, Switzerland

Filed Nov. 26, 1971, Ser. No. 202,485
Claims priority, application Switzerland, Dec. 4, 1970, 17951/70
Int. Cl. A23g *3/00*
U.S. Cl. 426—213 10 Claims

Expanded, edible granules are prepared by depositing drops of a syrup containing a sugar and at least one expanding agent on a bed of powered edible material and heating the drops, whilst in contact with the bed, to produce expansion and drying. The granules may for example be incorporated in chocolate or confectionery articles.

ELECTRICAL

3,835,227

AN ELECTROSLAG REMELTING SYSTEM WITH EQUALIZED PLURAL ELECTRODE REMELTING

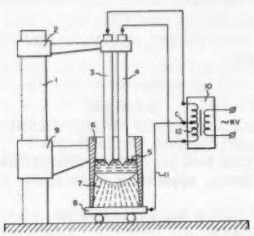
Boris Evgenievich Paton; Vladimir Konstantinovich Lebedev; Boris Izrailevich Medovar; Jury Vadimovich Latash; Oleg Petrovich Bondarenko; Vitaly Mikhailovich Baglai; Mikhail Nikolaevich Sidorenko, all of Kiev; Semen Abramovich Leibenzon; Gary Petrovich Kaganovsky, both of Zaporozhie; Andrei Pavlovich Altgauzen, Moscow; Leonid Evgenievich Nikolsky, Moscow; Zoya Alexandrovna Gorynina, Moscow; Ljudmila Andreevna Safronova, Moscow; Leonid Savvich Katsevich, Moscow; Lev Avramovich Volokhonsky, Moscow; Alexandr Alexandrovich Nikulin, Moscow; Vladimir Dmitrievich Artemiev, Moscow; Vladimir Mikhailovich Edemsky, Moscow, and Georgy Alexandrovich Voronin, Moscow, all of U.S.S.R., assignors to Institut Elektrosvarki IM. E. O. Patona, Kiev, U.S.S.R.

Division of Ser. No. 87,044, Nov. 5, 1970, abandoned, Continuation-in-part of Ser. No. 76,205, Sept. 28, 1970, Pat. No. 3,709,283, Continuation of Ser. No. 676,873, Oct. 20, 1967, abandoned. This application Oct. 19, 1972, Ser. No. 298,879

Claims priority, application U.S.S.R., Dec. 24, 1966, 1118607; Dec. 24, 1966, 1118608The portion of the term of this patent subsequent to Jan. 9, 1990, has been disclaimed.

Int. Cl. H05b *3/60*

U.S. Cl. 13—9 22 Claims



In an electroslag remelting installation, a pair of consumable electrodes are immersed into a molten slag bath contained in a mold, which can be cooled by various arrangements of cooling liquid. AC electrical power is applied between the electrodes to cause current flow through the electrodes and through the molten slag bath and part of the molten metal pool, thereby heating and causing the electrodes to melt to form an ingot. As the electrodes melt, they are simultaneously fed together into the slag bath. A conductor, connected between the bottom plate of the mold which can include a weld lug and either a center tap on the secondary winding of the transformer supplying AC power to the electrodes or to a center tap on a choke coil connected in parallel with the secondary winding, provides an equalizing circuit which automatically adjusts the melting of the electrodes to keep them at equal immersion depths in the slag bath. Flexible electrical lines and connectors are grouped in close arrangement and in parallel paths where possible to avoid inductance losses.

3,835,228

METHOD FOR ELECTROSLAG REMELTING WITH EQUALIZED PLURAL ELECTRODE REMELTING

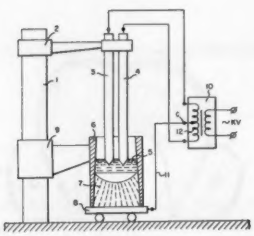
Boris Evgenievich Paton; Vladimir Konstantinovich Lebedev; Boris Izrailevich Medovar; Jury Vadimovich Latash; Oleg Petrovich Bondarenko; Vitaly Mikhailovich Baglai; Mikhail Nikolaevich Sidorenko, all of Kiev; Semen Abramovich Leibenzon; Gary Petrovich Kaganovsky, both of Zaporozhie; Andrei Pavlovich Altgauzen, Moscow; Leonid Evgenievich Nikolsky, Moscow; Zoya Alexandrovna Gorynina, Moscow; Ljudmila Andreevna Safronova, Moscow; Leonid Savvich Katsevich, Moscow; Lev Avramovich Volokhonsky, Moscow; Alexandr Alexandrovich Nikulin, Moscow; Vladimir Dmitrievich Artemiev, Moscow; Vladimir Mikhailovich Edemsky, Moskovskaya, and Georgy Alexandrovich Voronin, Moscow, all of U.S.S.R., assignors to Institut Elektrosvarki IM. E. O. Patona, Kiev, U.S.S.R.

Division of Ser. No. 87,044, Nov. 5, 1970, , which is a continuation-in-part of Ser. No. 76,205, Sept. 28, 1970, Pat. No. 3,709,283, which is a continuation of Ser. No. 676,873, Oct. 20, 1967, abandoned. This application Oct. 19, 1972, Ser. No. 298,950

Claims priority, application U.S.S.R., Dec. 24, 1966, 1118607; Dec. 24, 1966, 1118608The portion of the term of this patent subsequent to Jan. 9, 1990, has been disclaimed.

Int. Cl. H05b *3/60*

U.S. Cl. 13—9 7 Claims



In an electroslag remelting installation, a pair of consumable electrodes are immersed into a molten slag bath contained in a mold, which can be cooled by various arrangements of cooling liquid. AC electrical power is applied between the electrodes to cause current flow through the electrodes and through the molten slag bath and part of the molten metal pool, thereby heating and causing the electrodes to melt to form an ingot. As the electrodes melt, they are simultaneously fed together into the slag bath. A conductor, connected between the bottom plate of the mold and either a center tap on the secondary winding of the transformer supply AC power to the electrodes or to a center tap on a choke coil connected in parallel with the secondary winding, provides an equalizing circuit which automatically adjusts the melting of the electrodes to keep them at equal immersion depths in the slag bath. Electrical lines and connectors are grouped in close arrangement and in parallel paths where possible to avoid inductance losses.

3,835,229

SYSTEM FOR ELECTROSLAG REMELTING AND WITH MEANS TO EQUALIZE PLURAL ELECTRODE REMELTING

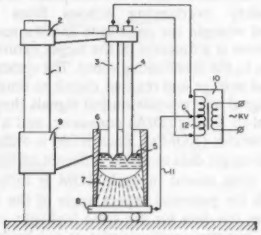
Boris Evgenievich Paton; Vladimir Konstantinovich Lebedev; Boris Izrailevich Medovar; Jury Vadimovich Latash; Oleg Petrovich Bondarenko; Vitaly Mikhailovich Baglai; Mikhail Nikolaevich Sidorenko, all of Kiev; Semen Abramovich Leibenzon; Gary Petrovich Kaganovsky, both of Zaporozhie; Andrei Pavlovich Altgauzen, Moscow; Leonid Evgenievich Nikolsky, Moscow; Zoya Alexandrovna Gorynina, Moscow; Ljudmila Andreevna Safronova, Moscow; Leonid Savvich Katsevich, Moscow; Lev Avramovich Volokhonsky, Moscow; Alexandr Alexandrovich Nikulin, Moscow; Vladimir Dmitrievich Artemiev, Moscow; Vladimir Mikhailovich Edemsky, Moskovskaya Obl., and Georgy Alexandrovich Voronin, Moscow, all of U.S.S.R., assignors to Institut Elektrosvarki Im. E.O. Patona, Kiev, U.S.S.R.

Continuation of Ser. No. 87,044, Nov. 5, 1970, , which is a continuation-in-part of Ser. No. 76,205, Sept. 28, 1970, Pat. No. 3,709,283, which is a continuation of Ser. No. 676,873, Oct. 20, 1967, abandoned. This application June 22, 1973, Ser. No. 372,655

Claims priority, application U.S.S.R., Dec. 24, 1966, 1118607; Dec. 24, 1966, 1118608The portion of the term of this patent subsequent to Jan. 9, 1990, has been disclaimed.

Int. Cl. H05b *3/60*

U.S. Cl. 13—9 **15 Claims**



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3,835,230

D.C. ARC FURNACE FOR STEELMAKING

Alexander Yordanov Valchev; Emil Pantaleev Ninov; Vasil Georgieu Peev; Velyu Todorov Velev; Georgi Alexandrov Visokomogilski, and Yordan Ivanov Krestenyakov, all of Sofia, Bulgaria, assignors to Nipkti po Cherna Metalurgia, Sofia, Bulgaria

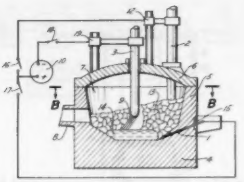
Filed Aug. 1, 1973, Ser. No. 384,575

Claims priority, application Bulgaria, Aug. 29, 1972, 20391

Int. Cl. H05b *7/00*

U.S. Cl. 13—9 **8 Claims**

A system for producing steel comprises a d-c arc furnace having at least one water-cooled anode connectable to the d-c source and effective after melting has progressed to generate an arc between the melt and a cathode juxtaposed therewith. A melting diode is connectable to the d-c source initially and



is pressed against the mass to be melted for the initial melting and is movable to follow the decrease in level of this mass as the melting progresses. Switches disconnect the melting anode and connect the process anode to the source.

3,835,231

TILTING FURNACE

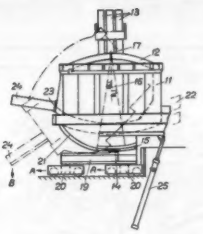
Jan Marchner, Vasteras, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Nov. 9, 1972, Ser. No. 304,894

Claims priority, application Sweden, Nov. 9, 1971, 14265/71

Int. Cl. F27b *14/02*

U.S. Cl. 13—10 **4 Claims**



A tilting furnace has non-tiltable electrodes through its roof. The bottom portion of the furnace has supporting rolls arranged on both sides of a vertical line through the center of gravity of the furnace when the furnace is in upright position, and cradle beams at the sides of the supporting rolls. For deslagging without moving the electrodes, the furnace may be rotated through small angles around a stationary fulcrum near the roof with the supporting rolls rolling on a base. Beyond these small angles, the electrodes are withdrawn and the furnace may move laterally onto the cradle beams to roll further over on the base.

3,835,232

CHARGING MEANS

Jan Marchner, Vasteras, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Nov. 22, 1972, Ser. No. 308,712

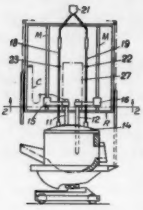
Claims priority, application Sweden, Dec. 1, 1971, 15362/71

Int. Cl. F27b *14/02;* **H05b** *7/00*

U.S. Cl. 13—10 **4 Claims**

A tilting arc furnace has a roof through which liftable electrodes are passed and to which furnace material charging tubes are applied, both the electrodes and the charging tubes

requiring to be removed free from the roof to permit tilting of the furnace. The electrodes have lifting arms and the tubes pass through the arms and above the arms have carriers which



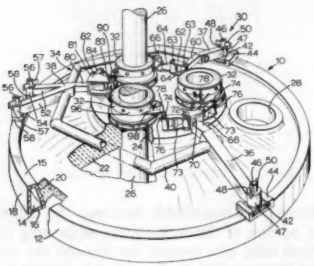
during the lifting action of the arms, are engaged by the arms so that the tubes are simultaneously lifted, both the electrodes and tubes lifting free from the furnace roof for tilting of the furnace.

3,835,233

ELECTRODE SEALS FOR ELECTRIC-ARC FURNACES

Otto E. Prenn, Sherwood Park, Alberta, Canada, assignor to The Steel Company of Canada, Limited, Hamilton, Ontario, Canada

Filed Dec. 7, 1973, Ser. No. 422,839
Int. Cl. H05b 7/10
U.S. Cl. 13—17 **11 Claims**



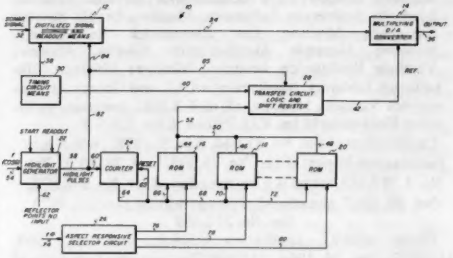
This invention provides a seal assembly for use with an electric arc furnace in which a refractory roof covers the furnace proper, and in which at least one electrode passes through the roof. The electrode is supported independently of the roof. The seal assembly includes a main seal ring which closely encircles the electrode, supporting structure capable of carrying the weight of the main ring seal and resting on the periphery of the refractory roof, in order to avoid putting extra weight on the central portion thereof. The supporting structure includes certain pivoting link members which permit lateral mobility of the main ring seal with respect to the refractory roof, and there is also included an adjustable sealing means adapted to close the gap between the main ring seal and the refractory roof. This structure permits the roof to move to some extent in the vertical direction due to thermal expansion, etc., without affecting the main ring seal, and further permits the electrode to undergo certain lateral movements (horizontal) without placing any resultant stress on the roof.

3,835,234

SONAR ECHO SIMULATOR

Francis J. Murphree, Panama City, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 9, 1973, Ser. No. 386,918
Int. Cl. G09b 9/06
U.S. Cl. 35—10.4 **4 Claims**



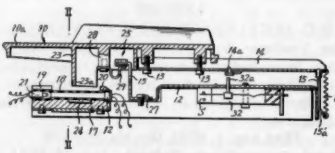
An electrical system for generating simulated sonar echoes wherein each simulated echo is the composite of a number of spaced, possibly overlapping echoes from the target highlights, and wherein the amplitude and the spacing of the individual echoes is a function of the target nature and target aspect relative to the illuminating sonar. The system employs a digitized signal storage and readout circuit to time sample the input sonar signal and provide output signals through a multiplying digital to analog (D/A) converter, and a plurality of read only memories (ROM's). Each ROM is different in that each ROM has target data stored at different addresses therein and also the data stored in each ROM is different in accordance with the potential aspect angle of the target. Also each ROM has the data for the same highlight stored at the same address, but the amplitude of a particular highlight is a variable quantity, including zero, depending upon the azimuth sector over which the ROM is used. The ROM's are employed in conjunction with a highlight generator, counter means and an aspect angle responsive selector circuit to provide, via ROM address and ROM selection, suitable data to the multiplying D/A converter to provide the simulated echo desired.

3,835,235

KEYBOARD TYPE ELECTRONIC MUSICAL INSTRUMENT

Hiroshi Amano, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Japan

Filed Nov. 29, 1973, Ser. No. 420,135
Claims priority, application Japan, Dec. 2, 1972, 47-121047; Dec. 2, 1972, 47-121048
Int. Cl. G10h 1/00
U.S. Cl. 84—1.01 **11 Claims**



A keyboard type electronic musical instrument, which is capable of producing such musical effects as tremolo and glide, is disclosed. A flexible hollow tube is provided below

each key together with a light source and a light-sensitive variable resistor provided at opposite open ends of the tube, so that the tube forms a passage through which the light travels from the light source to the light-sensitive variable resistor, the tube being adapted to be deformed by depressing the associated key to an extra extent or driving it toward left or right from its lower set position to thereby vary the quantity of light from the light source incident on the light-sensitive variable resistor. The light-sensitive variable resistor serves to produce a signal corresponding to the quantity of light incident on it, the signal being used to produce tremolo or other musical effects.

3,835,236

APPARATUS FOR PRODUCING BASE TONES IN AN ELECTRONIC MUSICAL INSTRUMENT

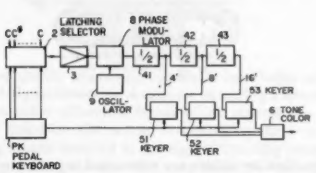
Takeshi Adachi, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Shizuoka-ken, Japan

Filed Aug. 29, 1973, Ser. No. 392,401

Claims priority, application Japan, Aug. 30, 1972, 47-101224[U]; Aug. 30, 1972, 47-101225[U]; Aug. 30, 1972, 47-101226[U]; Aug. 30, 1972, 47-101227[U]; Aug. 30, 1972, 47-101228[U] Aug. 30, 1972, 47-101229[U]; Aug. 30, 1972, 47-101230[U] Aug. 30, 1972, 47-101231[U]

Int. Cl. G10h *1/02*

U.S. Cl. 84—1.24 **12 Claims**



An apparatus for producing base tones in an electronic musical instrument adapted to produce base tones by successively frequency dividing a base tone signal selected by a single tone selection circuit by ½ frequency dividers to obtain a plurality of foot-register signals and providing these foot-register signals with desired envelope and tone-color. The base tone to be obtained is provided with a "sway" effect either by phase-modulating a base tone signal by a modulating signal of about 1 Hz, by phase-modulating each foot-register signal in the same phase or in different phases by a modulating signal of about 1 Hz, or by phase-modulating the output signal of a tone-color circuit by a modulating signal of about 1 Hz. In one form of the inventive apparatus, the base tone signal is fed to two separate systems. In this case, the phase modulation is carried out in one of the systems and not in the other. The phase modulation may also be carried out in both systems in which case modulating signals differing in phase by 180° from each other are used for the phase modulation.

3,835,237

ELECTRONIC MUSICAL INSTRUMENT WITH KEY-DEPENDENT TIME-VARIABLE DELAYING DEVICE

Takeshi Adachi, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Shizuoka-ken, Japan

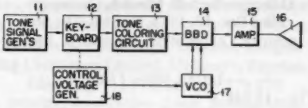
Filed Sept. 17, 1973, Ser. No. 397,748

Claims priority, application Japan, Sept. 19, 1972, 47-93858; Sept. 19, 1972, 47-93861

Int. Cl. G10h *1/02*

U.S. Cl. 84—1.24 **10 Claims**

An electronic musical instrument includes in a tone signal path a signal delaying device constituted by a bucket brigade device to which is supplied transfer clock pulses which determine of the delay time. A keyboard is provided with a control voltage generator generating a control voltage representing



the depressed key or keys. The control voltage is supplied to the clock pulse generator for determining the frequency of the transfer clock pulses generated thereby.

3,835,238

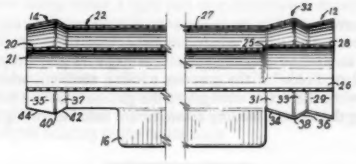
SPIRAL CONDUCTOR COVER

Edward L. West, Sturgeon, Mo., assignor to A. B. Chance Company, Centralia, Mo.

Filed June 18, 1973, Ser. No. 370,860

Int. Cl. H02g *1/02*; **H01b** *17/00*

U.S. Cl. 174—5 R **4 Claims**



An improved electrical conductor cover is provided which is operable to be positioned in enclosing relationship to portions of highly energized conductors in order to protect linemen or other working in the vicinity thereof. The cover is fabricated from an elongated, continuous sheet of electrically insulative synthetic plastic material and is shaped to present a generally spiral cross section with inner and outer spirals of substantially equal length. Both the inner and outer spirals are configured to telescopically engage and interconnect with a complementary adjacent conductor cover or other piece of cover-up equipment such as insulator covers of varying types, without the need of separate connection structures. By virtue of the fact that the inner spiral extends the entire length of the cover and interconnects with a similar member of another conductor cover or other piece of cover-up equipment, a conductor received therein is completely encased in an insulative sleeve of plastic material without gaps along the length thereof, and consequently the cover is capable of effectively insulating conductors energized to very high levels.

3,835,239
CURRENT FEEDING ARRANGEMENT FOR ELECTRICAL APPARATUS HAVING LOW TEMPERATURE COOLED CONDUCTORS

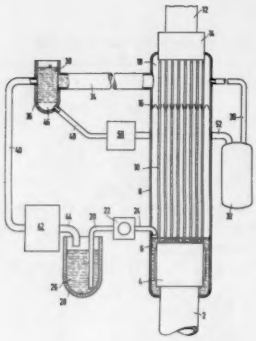
Fritz Schmidt, Erlangen; Gunther Matthaus, Spardorf, and Peter Massek, Forchheim, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Dec. 13, 1972, Ser. No. 314,564

Claims priority, application Germany, Dec. 27, 1971, 2164706

Int. Cl. H01v *11/00*

U.S. Cl. 174—15 BH **8 Claims**



A current feeding arrangement for a superconductor, having a cooled standard conductor connected to it. The invention is comprised of adding an electronegative gas, a vaporous radical or Freon to the gaseous cooling medium, which increases the dielectric strength of the gaseous cooling medium making the current feeding arrangement suitable for high voltages.

3,835,240
FLUID COOLED ELECTRICAL CABLE

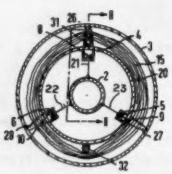
Gunther Matthaus, Hohe Warte, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Sept. 20, 1973, Ser. No. 399,353

Claims priority, application Germany, Sept. 28, 1972, 2247716

Int. Cl. H01v *11/00*

U.S. Cl. 174—15 C **11 Claims**



A fluid cooled electrical cable, of the type including an electrical conductor immersed in a low-temperature cooling medium, an inner tube in which the electrical conductor and cooling medium are disposed, a radiation shield disposed about the inner tube, an outer tube concentrically disposed about the inner tube and spaced apart therefrom, and superinsulation disposed about the radiation shield and the inner tube within the outer tube and in which the inner tube is suspended in the outer tube by means of suspension wires attached thereto. The improvement comprises the provision of axially displaceable mounting means, fastened to the radially inner surface of the outer tube and coupled to the suspension wires for restraining the inner tube from circumferential movement about its longitudinal axis with respect to the outer tube. The mounting means is configured as a plurality of spaced apart, elongated, slotted tracks fastened to the inner surface of the outer tube, and a plurality of rollers mounted on at least one transverse axle disposed therein to which the suspension wires are coupled. The assembly permits the axial displacement of the inner tube with respect to the outer tube but restrains circumferential movement of the inner tube.

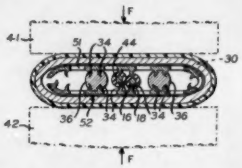
3,835,241
ADAPTOR FOR MODIFYING CONNECTOR TO ACCOMMODATE SMALLER CONDUCTORS

Joseph B. Masterson, Carteret, and John D. Lawler, Bayonne, both of N.J., assignors to General Cable Corporation, New York, N.Y.

Filed June 30, 1972, Ser. No. 268,147

Int. Cl. H02g *15/08*

U.S. Cl. 174—87 **9 Claims**



Communication cables are connected together by inserting end portions of insulated conductors into connectors having inwardly projecting tangs, and the connectors are then compressed to grip the wires and force the tangs to cut through the insulation and part way through the wires to hold the wires firmly in the connector and in an electrical circuit with each other. Such standard connectors could not be used with wires smaller than No. 26 AWG. This invention places an adaptor in the connector as a stop to limit the flattening of the connector against the wires, and to prevent the connector sleeve from closing tight enough to cut through wires as small as No. 28 AWG. The range of wire sizes that the connector can be used for is thereby extended.

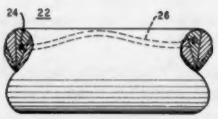
3,835,242
MULTI-FILAMENT COMPOSITE SUPERCONDUCTOR WITH TRANSPOSITION OF FILAMENTS

Philip R. Critchlow, 1843 Edgewood, St. Bruno, Quebec, Canada, and Bruce A. Zeitlin, 234 Henry Ct., North Plainfield, N.J. 07060

Filed Sept. 6, 1972, Ser. No. 286,625

Int. Cl. H01v *11/08*

U.S. Cl. 174—126 CP **9 Claims**



A multi-filament superconducting composite composed of a plurality of segments that is intrinsically stable. The individual segments are multi-filament composites that have been

twisted after assembly and mechanical working and thereafter subsequently deformed. The deformed segments can be triangular or rectangular and are assembled into a second composite. After assembly the second composite is once again twisted. This second twisting transposes the filaments within the segments, thereby producing a superconductor that is resistant to flux jumps induced by self-field losses.

3,835,243

CIRCUITRY FOR REDUCING EFFECTS OF NOISE ON COLOR IMAGE

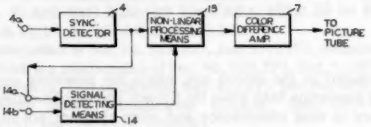
Yoshitomi Nagaoka, Osaka, Japan, assignor to Matsushita Electric Industrial Co. Ltd., Osaka, Japan

Filed Apr. 3, 1973, Ser. No. 347,372

Claims priority, application Japan, Apr. 7, 1972, 47-35474; July 10, 1972, 47-69322; July 10, 1972, 47-69323; Oct. 19, 1972, 47-105102; Oct. 19, 1972, 47-105103

Int. Cl. H04n *9/12*

U.S. Cl. 178—5.4 R **7 Claims**



A picture quality improving apparatus for a color television receiver. A signal detecting means for detecting a specific portion of the color-difference signal which reproduces a high-saturation color on the screen is connected to a nonlinear processing means coupled to the signal detecting means. The processing means reduces the amplitude of the color-difference signal in response to the output signal of the signal detecting means in order to eliminate noise disturbances, decreases in the sharpness and luminance errors appearing in a high-saturation color portion of a picture.

3,835,244

WIRED BROADCASTING SYSTEMS

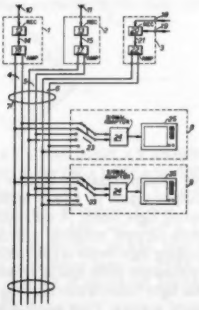
Daniel Henry Smart, Morden, England, assignor to Communications Patents Limited, London, England

Filed Dec. 2, 1971, Ser. No. 204,144

Claims priority, application Great Britain, Dec. 2, 1970, 57310/70

Int. Cl. H04n *7/10*

U.S. Cl. 178—5.6 **6 Claims**



A wired television broadcasting system using television receivers designed for aerial reception has specific frequencies for vision and sound carriers to place the beat therebetween at a frequency rejected by the adjacent channel sound rejection characteristics of the television receivers.

3,835,245

INFORMATION MODIFICATION IN IMAGE ANALYSIS SYSTEMS EMPLOYING LINE SCANNING

Leon Andre Pieters, Cambridge, England, assignor to Image Analysing Computers Limited, Melbourn, Royston, England

Filed Aug. 7, 1972, Ser. No. 278,279

Claims priority, application Great Britain, Aug. 7, 1971, 37226/71

Int. Cl. H04n *7/18*

U.S. Cl. 178—6.8 **47 Claims**

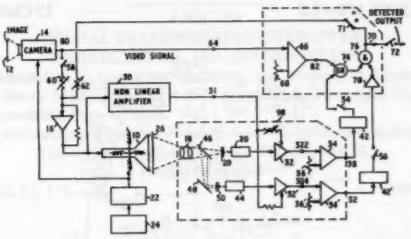


Image analysis apparatus and methods of operating same, having a surface on which outlines or areas can be delineated by hand, using either a light pen or conventional drawing instrument such as a pencil and near or on which a representation of a field under analysis is generated, a scanner for generating a video signal relating to the delineated outline or area in synchronism with the scanning of the field under analysis and circuit means for combining the video signal pulses obtained from scanning the field with pulses obtained from the video signal relating to the delineation.

3,835,246

TELEVISION DISPLAY SYSTEM FOR ELECTROMAGNETIC BEAM APPARATUS

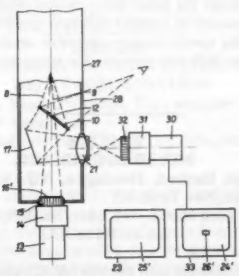
Karl-Heinz Muller; Volker Rindfleisch; Moriz Von Rauch; Dieter Willasch, and Georg Dollmeier, all of Berlin, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Jan. 18, 1973, Ser. No. 324,798

Claims priority, application Germany, Jan. 28, 1972, 2204654

Int. Cl. H01j *37/26;* **H04n** *7/18*

U.S. Cl. 178—6.8 **4 Claims**



An electromagnetic particle beam device, such as an electron microscope, includes a fluorescent screen mounted in the

focal plane of the beam for providing a direct image a television camera arranged behind a window in the flourescent screen separately picks up and enlarges the part of the image which falls in the area of the window to permit simultaneous viewing of an overall picture and an electronically enlarged section of the picture.

3,835,247

FIELD ILLUMINATION FOR IMAGE ANALYSIS

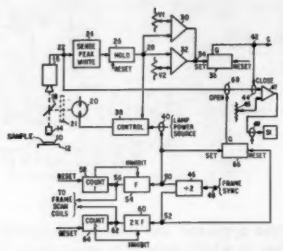
Michael Richard Soames, Fulbourn, England, assignor to Image Analysing Computers Limited, Melbourn, Royston, England

Filed May 11, 1972, Ser. No. 252,237

Claims priority, application Great Britain, May 11, 1971, 14230/71; May 27, 1971, 17687/71

Int. Cl. H04n *1/02*

U.S. Cl. 178—7.2 **13 Claims**



The invention provides methods and apparatus whereby feature information in each of a number of successive images may be analysed. In particular continuous relative movement between the specimen and image device is provided for thereby eliminating the settlement times characteristic of systems employing intermittent relative movement between specimen and imaging device.

The invention envisages the use of a gas discharge tube light source and proposes the insertion of a light diffusing device between the light source and specimen to reduce errors due to movement of the shading pattern caused by movement of the arc from flash to flash.

The invention also provides means for sensing the light output and/or illumination level of the field to control the light output from the light source to maintain this substantially constant during an analysis.

The high speed of operation achieved by the invention is due to the synchronism of a flashing light source with the continuous relative movement between specimen and imaging device.

The specimen may for example be mounted on a microscope stage the latter being moved relative to the optics of the microscope to present different areas for analysis. Alternatively the specimen may comprise small objects located on a conveyor belt and presented in succession to an imaging device.

3,835,248

KEYED AGC CIRCUIT

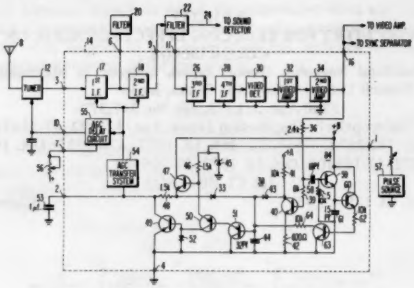
Jack Rudolph Harford, Flemington, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 5, 1973, Ser. No. 338,109

Int. Cl. H04n *5/52*

U.S. Cl. 178—7.3 R **19 Claims**

A keyed automatic gain control (AGC) circuit for a television receiver rapidly responds to changes in the level of a received television signal by using a sample and hold arrangement wherein the time for sampling the amplitude of the synchronizing pulses is less than the shortest pulse width of any of the synchronizing pulses of the television signal. The value of an AGC current supplied by the AGC circuit is dependent upon the amplitude and polarity of the synchronizing pulse components with respect to a reference level and is substantially independent of the width of the synchronizing pulse components.



Included in the circuit are means for providing impulse noise protection both when the flyback and synchronizing pulses are in time coincidence and when they are not in time coincidence. Furthermore, a non-keyed component of AGC current is provided to prevent sync stripping during non-synchronized operation.

3,835,249

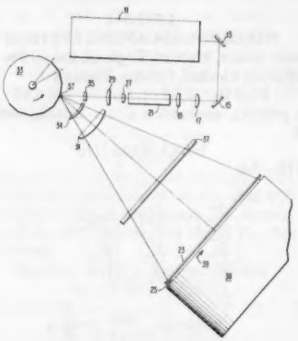
SCANNING LIGHT SYNCHRONIZATION SYSTEM

Anthony J. Dattilo, and Donald W. Zegafuse, Jr., both of Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 26, 1972, Ser. No. 317,976

Int. Cl. H04n *3/08*

U.S. Cl. 178—7.6 **12 Claims**



A scanning light synchronization system generates a real time clock, the output signal of which indicates the precise position of a scanning light beam. A collimated light beam is diverted by a multi-faceted rotating mirror in a scanning direction. The scanning light beam is split along two paths by a light diverter: a utilization path and a synchronization path. That portion of the light beam traversing the synchronization path scans an optical grating. That portion of the light beam passing through the grating is thereafter reflected from the surface of an elliptical mirror to a light detection device. The elliptical mirror is positioned so that its first optical foci is located at the diversion point of the scanning mirror and its

second optical foci is located at the light detector. The light detector provides an output signal indicating the real time position of the scanning beam traversing the utilization path. This output signal is utilized with stored information to modulate the scanning beam so that the light beam traversing the utilization path creates an image on a light receptive surface. The output of the light detection device is also utilized in conjunction with light reflected from a document surface placed in the utilization path to effect the clocking of information signals obtained from such reflected light.

3,835,250

EXPLOSION-PROOF CATHODE-RAY TUBES

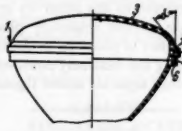
Alexei Yakovlevich Kaljuko, ulitsa Leschinskaya, 12; Fridrikh Levikovich Simkhovich, ulitsa Rechitskoe shosse, 15, kv. 40; Nina Fedorovna Cherednik, ulitsa Kirova, 134, kv. 54; Ljudmila Dmitrievna Pravednaya, prospekt Lenina, 14, kv. 29; Alexei Mikhailovich Kasakov, prospekt Lenina, 59, kv. 126; Alexandr Mikhailovich Saposhkov, ulitsa Pobedy, 18a, kv. 6, and Anri Iosifovich Lischinsky, ulitsa 50 let BSSR, dom 23, kv. 51, all of Gomel, U.S.S.R.

Continuation of Ser. No. 325,127, Jan. 19, 1973, abandoned, which is a continuation of Ser. No. 187,274, Oct. 7, 1971, abandoned. This application Nov. 6, 1973, Ser. No. 413,331

Claims priority, application U.S.S.R., Oct. 27, 1970, 1481151; Dec. 19, 1970, 1496301

Int. Cl. H01j *31/08*; H01k *1/28*

U.S. Cl. 178—7.8 **4 Claims**



An explosion-proof cathode-ray tube has an anti-explosion device made as an annular frame which is mounted onto the tube envelope at a critical zone thereof so that there is a gap therebetween which is filled with a self-expanding filler. The frame is provided with a flange, contacting the envelope at the side of the tube screen along the whole of its perimeter, and having a recess facing the surface of the envelope that corresponds to the critical zone of the envelope. The recess has a special profile designed in a manner ensuring a counterbalancing of axial tensions occuring in the tube envelope in its critical zone.

3,835,251

CATHODE RAY TUBE DISPLAY ASSEMBLY HAVING DIVERSE OPTICAL MEANS THEREIN

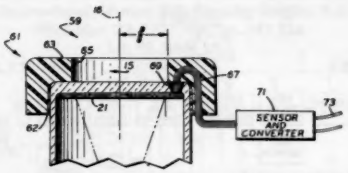
Alfred D. Johnson, Seneca Falls, N.Y., assignor to Sylvania Electric Products Inc., Stamford, Conn.

Continuation of Ser. No. 195,341, Nov. 3, 1971, abandoned, which is a division of Ser. No. 34,023, May 4, 1970, Pat. No. 3,668,387. This application June 22, 1973, Ser. No. 372,853

Int. Cl. H01j *29/89, 29/18*

U.S. Cl. 178—7.85 **3 Claims**

A cathode ray tube display assembly having a faceplate panel wherein at least one optical insert of low-attenuation optical material is disposed through the faceplate in substantially the peripheral region thereof to provide at least one defined light channel therethrough. The insert, being covered by the peripheral portion of the screen, provides means for channeling a discrete portion of excited screen luminescence through the faceplate.



3,835,252

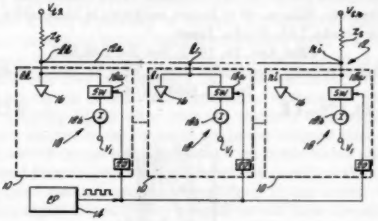
SIGNAL TRANSMISSION SYSTEM OVER BIDIRECTIONAL TRANSMISSION LINE

Constantine S. Ananiades, Pasadena, and Kenneth D. Krossa, Sierra Madre, both of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Continuation of Ser. No. 774,645, Nov. 12, 1968, abandoned. This application July 20, 1973, Ser. No. 381,263

Int. Cl. H04l *15/00*

U.S. Cl. 178—68 **11 Claims**



A signal transmission and receiving system. A transmission line is bidirectional along its length. An impedance element terminates each end of the transmission line. Line drivers each have an output circuit connected at a respective point on the transmission line. Each line driver has a first state presenting an open circuit and a second state for applying a current signal on the transmission line. A receiver has an input connected to the transmission line and responds to the presence or absence of a voltage signal exceeding a predetermined threshold caused by any one of the line drivers for forming corresponding output signals. Each line driver is characterized in the second state for changing the current on the transmission line so as to change in a predetermined direction the voltage level, if any, on the transmission line caused by current from another line driver.

3,835,253

TELEVISION COMMUNICATION SYSTEM WITH TIME DELAY COMPENSATION

Donald Spencer Bond, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

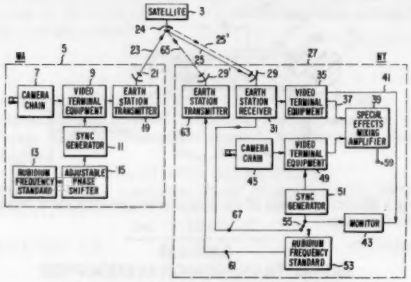
Filed July 10, 1972, Ser. No. 270,246

Int. Cl. H04n *5/04, 7/14*

U.S. Cl. 178—69.5 DC **5 Claims**

A television station which receives remotely originated signals via relay satellite can time its local sync and burst signal generators with a standard reference frequency which it itself sends to the relay satellite and receives back from the relay satellite. This permits locally originated signals timed by the local sync and burst signal generators to be synchronized with the remotely originated signals to good approximation, despite time delay variations of the remotely originated signals caused by variations of the relay satellite orbit, permitting an

adjustable delay line to then be used to compensate remnant delay variations. Consequently, cross fading or other special-



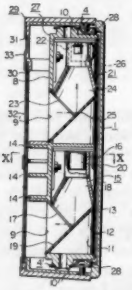
effects mixing between locally and remotely originated programs is facilitated.

3,835,254

ULTRASONIC TRANSMITTING AND RECEIVING DEVICE

Hiroshi Ohasi, Neyagawa; Shinsuke Okamoto, Nishinomiya; Hiromitsu Inoue, Kyoto; Hirokazu Mori, Osaka, and Mineo Okamoto, Hikone, all of Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Apr. 24, 1972, Ser. No. 246,537
Claims priority, application Japan, May 31, 1971, 46-45494
Int. Cl. H04m *1/00*
U.S. Cl. 179—1 E **2 Claims**



An ultrasonic transmitting and receiving device wherein horns are substantially vertically fitted to a holding frame so that opening side of the respective horns will be directed downward. Each horn is provided in its throat section with an ultrasonic oscillator and in its opening with a reflector diagonally opposing the oscillator.

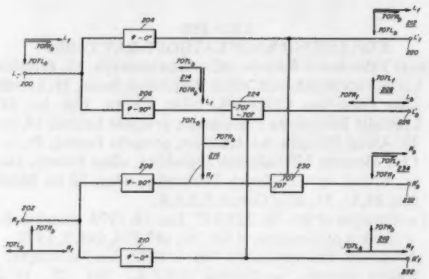
3,835,255

MATRIX DECODERS FOR QUADRAPHONIC SOUND SYSTEM

Benjamin B. Bauer, Stamford, Conn., assignor to Columbia Broadcasting System, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 185,050, Sept. 30, 1971, Pat. No. 3,813,494, which is a division of Ser. Nos. 44,224, June 8, 1970, abandoned, and Ser. No. 118,271, Feb. 24, 1971, Pat. No. 3,784,744, and Ser. No. 124,135, March 15, 1971,. This application Mar. 7, 1973, Ser. No. 338,691
Int. Cl. H04h *5/00*
U.S. Cl. 179—1 GQ **25 Claims**

In a multi-channel sound system, decoding apparatus for deriving from two composite signals transduced from a two-track record medium a plurality (e.g., four) of separate sound signals contained in the composite signals for presentation on respective loudspeakers to give the listener the illusion of sound coming from a corresponding number of separate sources. Typically, the two composite signals respectively contain signal components intended for presentation on loudspeakers positioned at the left front and right front corners of a listening area, and both composite signals contain signals intended for presentation on loudspeakers positioned at the left back and right back corners of the listening area, with the left



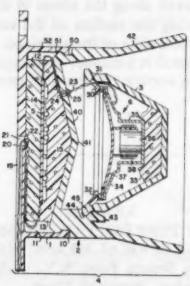
back and right back signals in one composite signal in substantially quadrature relationship with corresponding signals in the other. The decoder includes all-pass phase-shifting networks designed to transmit all frequencies in the frequency range of interest which are operative to shift the phase of one of the composite signals relative to the other by an angle to cause corresponding signals in the relatively phase-shifted composite signals to be either in phase or in phase opposition and networks for combining the relatively phase-shifted composite signals to derive the four separate sound signals.

3,835,256

LOUDSPEAKER ENCLOSURE

Horst K. Wieder, 211 Lowell St., Watertown, Wis. 53094

Filed July 9, 1973, Ser. No. 377,761
Int. Cl. H04r *1/28*
U.S. Cl. 179—1 E **8 Claims**

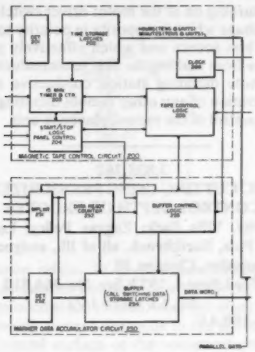


Enclosure and mounting for a loudspeaker is combined with enclosure and mounting for a printed circuit board associated with the loudspeaker. Mounting means for both the loudspeaker and printed circuit board are resilient. All parts of the combination enclosure and the mounting means interact in such fashion that the device is devoid of fasteners such as screws, rivets, adhesive or the like.

3,835,257
METHOD OF RECORDING DATA INCLUDING SAMPLING RATE

Donald W. McLaughlin, Bolingbrook, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Dec. 13, 1972, Ser. No. 314,888
Int. Cl. H04m *15/04*
U.S. Cl. 179—8 A **11 Claims**

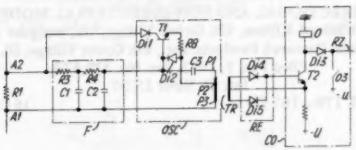


Traffic supervisory equipment for use in a telephone communication system adapted to record call switching data. Included is circuitry that causes the rate of sampling of data to be recorded as well as the sampled data itself.

3,835,258
RING TRIP CIRCUIT

Gerhard Marcel Le Cardonnel, Neuilly-sur-Seine, France, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Feb. 1, 1973, Ser. No. 328,706
Claims priority, application France, Feb. 17, 1972, 72.05290
Int. Cl. H04m *3/02*
U.S. Cl. 179—18 HB **4 Claims**

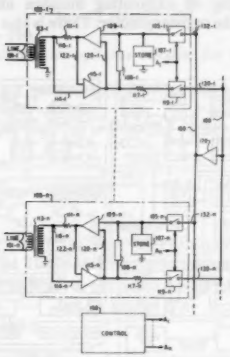


An electronic circuit is disclosed for detecting when a telephone handset is lifted in response to ringing tone and for providing a voltage which operates a relay to interrupt the transmission of ringing current. The circuit includes an oscillator controlled by the d.c. potential difference across a resistor in series with a wire carrying ringing current to the telephone line. The oscillator is coupled through transformer windings to the circuits to be controlled.

3,835,259
TIME DIVISION CONFERENCE HYBRID CIRCUIT

David Gordon Medill, Denver, and Patrick Alban Vachon, Arvada, both of Colo., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Mar. 22, 1973, Ser. No. 343,824
Int. Cl. H04j *3/02*
U.S. Cl. 179—18 BC **5 Claims**



In a time division communication system a conference connection among a plurality of stations is established utilizing station associated hybrid circuits connected to an incoming common bus and an outgoing common bus in an assigned conference time slot. It is required that each station receive the outgoing signals of the other conferenced stations but not its own outgoing signal while only the station's own outgoing signal is applied to the outgoing bus in the assigned time slot. Each hybrid circuit stores the sum of the conferenced signals received from the incoming bus in the assigned time slot. The associated station's own outgoing signal in the stored conference signal is canceled by a signal derived from the station outgoing signal in a first difference amplifier so that only the signals from the other conferenced stations are applied to the associated station. The other conferenced station outgoing signals appearing at the associated station are prevented from returning to the outgoing bus through cancellation of said other station signals by a signal derived from the first amplifier output in a second difference amplifier whereby only the associated station's own outgoing signal is applied to the outgoing bus in the assigned time slot. A portion of the associated path outgoing signal from the second amplifier is applied to the hybrid storage capacitor in the interval between successive distinct time slots so that the storage capacitor includes the instantaneous value of the associated path outgoing signal for improved cancellation.

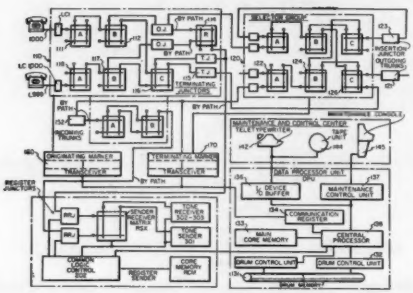
3,835,260
COMMUNICATION SWITCHING SYSTEM, WITH MARKER, REGISTER, AND OTHER SUBSYSTEMS COORDINATED BY A STORED PROGRAM CENTRAL PROCESSOR

Kenneth E. Prescher, Lombard; Ronald E. Schauer, Hanover Park, and Frank B. Sikorski, Des Plaines, all of Ill., assignors to GTE Automatic Electric Laboratories, Inc., North Lake, Ill.

Continuation-in-part of Ser. No. 130,133, April 1, 1971, abandoned. This application Mar. 19, 1973, Ser. No. 342,323
Int. Cl. H04q *3/54*
U.S. Cl. 179—18 ES **13 Claims**

A stored program computer is used for functions such as digit analysis and routing control where flexibility is important, while a wired logic time division multiplex register-sender subsystem is used to receive dialing and other call signals and to control outpulsing which require relatively fixed

functions of a repetitive nature. A reed relay switching network is controlled by wired logic markers which perform path selection functions as well as supplying operating potentials for the network relays. The originating marker also performs the function of scanning the lines for originating calls, identifying the calling line and selecting a path through the network to a register junctor. Direct data communication is provided between the originating marker and the data processor computer for sending an originating message identifying the calling line and the register junctor. There is also a direct communication path from the computer to the terminating markers to send them messages identifying terminals to be connected to complete a call. The data processor includes a separate drum memory system with its own processing logic circuits for performing functions such as translations and providing an extended memory for some programs for the computer. The data processor computer communicates with the register-sender subsystem by direct access to the register-sender memory on a random basis, arranged so as not to interfere with the cyclical access by the register-sender subsystem.

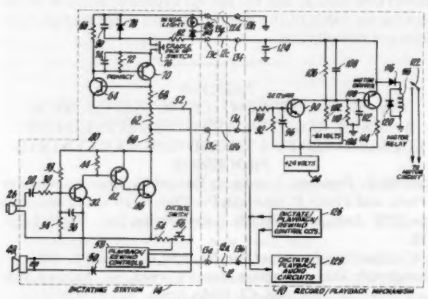


3,835,261

PRIVACY AND SEIZURE CONTROL CIRCUIT FOR A REMOTE STATION DICTATING SYSTEM

Bjorn J. Matz, Forest Hills, N.Y., assignor to Dictaphone Corporation, Rye, N.Y.

Filed Jan. 10, 1973, Ser. No. 322,530
Int. Cl. H04m *11/10*
U.S. Cl. 179—100.1 DR **8 Claims**



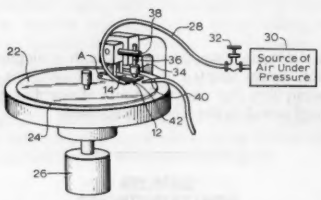
Each one of a plurality of remote dictating stations in a recording system includes a first semiconductor switch which is biased to become conductive ("on") when it is connected to a first bias source in a central record/playback unit by the closing of a cradle switch when the dictator phone of that station is lifted from its cradle. The turning on of the first semiconductor switch turns on a semiconductor seizure switch which in turn activates a semiconductor motor driver switch. The semiconductor motor driver switch, when activated, energizes a relay which controls the motor of the record/playback unit. When the semiconductor seizure switch becomes conductive, a bias voltage is fed back to the activated remote dictating station to switch on a second semiconductor switch in that dictating station which supplies a bias voltage to maintain the first semiconductor switch in its conductive state. Simultaneously the turning on of the motor driver switch produces a second bias voltage which is opposite in polarity to the voltage from the first bias source and which effectively prevents the first bias source from making the first semiconductor switch in any other remote dictating station conductive and thereby blocks the activation of any other remote dictating station and the seizing of control of the record/playback unit.

3,835,262

VIDEO DISC CUTTING USING PRESSURIZED AIR TO CONTROL DEPTH OF GROOVES

Scott N. Moritz, Villa Park; Eugene Polley, Lombard, and Werner H. Puls, Northbrook, all of Ill., assignors to Zenith Radio Corporation, Chicago, Ill.

Filed June 4, 1973, Ser. No. 366,812
Int. Cl. G11b *3/72*
U.S. Cl. 179—100.4 C **4 Claims**



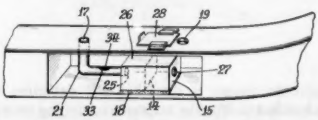
A method and apparatus for controlling the depth to which grooves are cut in a master video recording disc. Pressurized air is directed toward the surface of the disc in order to lift and maintain a cutting stylus assembly at a predetermined height above the surface of the disc, thereby assuring that the grooves will be cut to a predetermined reference depth.

3,835,263

MICROPHONE ASSEMBLY OPERABLE IN DIRECTIONAL AND NON-DIRECTIONAL MODES

Mead Clifford Killion, Elk Grove Village, Ill., assignor to Industrial Research Products, Inc., Elk Grove Village, Ill.

Filed Feb. 5, 1973, Ser. No. 329,673
Int. Cl. H04r *25/00*
U.S. Cl. 179—107 FD **15 Claims**



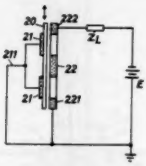
A microphone assembly being selectively operable in directional and non-directional modes; and, having similar response characteristics relative to frequency whether operating in one or the other mode.

3,835,264

SEMICONDUCTOR TRANSDUCER COMPRISING AN ELECTRET

Sune Lambert Overby, Stockholm, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed Sept. 28, 1972, Ser. No. 293,123
Claims priority, application Sweden, Oct. 13, 1971, 12992/71
Int. Cl. H04r 23/02
U.S. Cl. 179—111 E 4 Claims



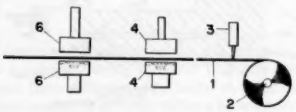
The invention relates to an electromechanical transducer comprising an electret one side of which faces a control surface of a semiconductor element and the other side of which faces a a movable control electrode to the semiconductor element. The control surface of the semiconductor element is, according to a first plane geometrical pattern, divided into a surface part responsive to an external field and into another surface part not responsive to an external field while the surface of the movable control electrode is divided into an electrically conducting surface part and into an electrically nonconducting surface part according to a second plane geometrical pattern which substantially corresponds to said first plane geometrical pattern. The control electrode is movable in parallel in relation to the field responsive control surface in order to vary the degree of overlapping between said first and second plane geometrical patterns and thereby generate a change in the inherent resistance of the semiconductor element.

3,835,265

VIBRATING MEMBER FOR ACOUSTIC TRANSDUCER

Tadashi Itagaki, Tokorozawa, Japan, assignor to Pioneer Electronic Corporation, Tokyo and Tokorozawa Electronics Corporation, Saitama, Pref., Japan

Filed Nov. 3, 1972, Ser. No. 303,544
Claims priority, application Japan, Nov. 8, 1971, 46-103200
Int. Cl. H04r 7/02
U.S. Cl. 179—181 R 8 Claims



A vibrating member for an acoustic transducer made of a transparent or translucent thin film and bearing a marking thereon, by which possible overlap of two or more vibrating members can be readily determined visually, and a method for producing the vibrating member comprising a marking step, a heating step and a punching step.

3,835,266

HOLLOW CARBONACEOUS MICROSPHERES SUITABLE FOR USE IN CARBON MICROPHONES

Masaaki Nakao, Urawa; Zenya Shiiki, and Yasuo Amagi, both of Tokyo, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 29, 1971, Ser. No. 213,751
Claims priority, application Japan, Dec. 29, 1970, 45-120975
Int. Cl. H04r 21/02
U.S. Cl. 179—190 3 Claims

Hollow carbon microspheres suitable for use in a carbon microphone.

A process for producing hollow carbon microspheres for use in carbon microphones.

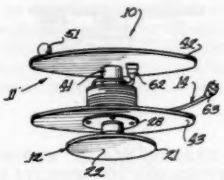
A carbon microphone containing hollow carbon microspheres.

3,835,267

REEL FOR ELECTRIC EXTENSION CORDS

Floyd L. Sharpe, 10416 McPherson, Indianapolis, Ind. 46280

Filed Dec. 4, 1973, Ser. No. 421,656
Int. Cl. H02g 11/00
U.S. Cl. 191—12.4 2 Claims



A reel for electric extension cords for storing a length of electric cord thereabout with any desired length of cord being unrolled therefrom with the remaining length of the cord retained rolled about the reel, the reel including a base having a shaft projecting upwardly therefrom and supporting for rotation at the top end of the shaft a spool mounted for rotation about the axis of the hub of the spool and having a top disc and bottom disc defining opposite ends of the spool, an electric receptacle mounted in the outer disc and having one end of an electrical cord attached thereto with the length of the cord being wound about the hub of the spool and terminating in an opposite end adapted to be plugged into a suitable power source, and a handle rotatably mounted to the top disc member adjacent an edge thereof and adapted for use in rotating the spool about its axis to unwind the electric cord from the hub of the spool and also to rewind the electric cord onto the spool hub.

3,835,268

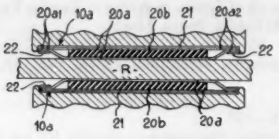
CONDUCTOR RAIL MOUNTINGS

Patrick Bommart, Rueil Malmaison, France, assignor to Acieries De Gennevilliers Anciens Etablissements C. Delachaux, Louis Roche, Gennevilliers, France

Filed Mar. 16, 1973, Ser. No. 340,780
Claims priority, application France, Mar. 17, 1972, 72.9437
Int. Cl. B60m 1/30
U.S. Cl. 191—32 11 Claims

A conductor rail mounting comprising a conductor rail member clamped to a support member with the interposition

of at least one cushion having a filling of resilient material and a cover for contacting at least one of the said members, the



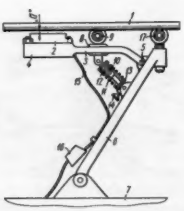
cover being formed from a material having a coefficient of friction substantially lower than that of the filling.

3,835,269

DEICING DEVICE

Igor Anatolievich Levin, Petrozavodskaya ulitsa 15, korpus 1,kv.113., Moscow; Konstantin Ivanovich Skobelev, Teatralny pereulok,40,kv.50.; Lev Iosifovich Levkovich, ulitsa Tekucheva 143,kv.48., and Boris Andreevich Pavljuk, ulitsa Vorovskogo,46,kv.37., all of Rostov-na-Donu, U.S.S.R.

Filed May 7, 1973, Ser. No. 358,123
Int. Cl. B60l *5/02*
U.S. Cl. 191—62 **20 Claims**



A device for deicing the surface of a wire, mainly the contact wire of electric transport facilities, comprising an appliance for generating electromagnetic field pulses acting on said wire; said appliance is installed in close proximity to the wire and secured relative to it on a support installed on a movable transport vehicle. The appliance for generating electromagnetic field pulses is constituted by an electromagnetic inductor made in the form of wire turns accommodated in a dielectric casing and connected to a power supply system. There is an approximately uniform gap "a" between said wire turns of the electromagnetic inductor and the wire to be deiced. The support for fastening said electromagnetic inductor is mounted on the current collector of the transport vehicle and is provided with various types of holders to which the electromagnetic inductor is directly secured. The wire turns of the electromagnetic inductor may be either circular or elliptical in shape with the larger axis of the ellipse directed either along or across the wire to be deiced.

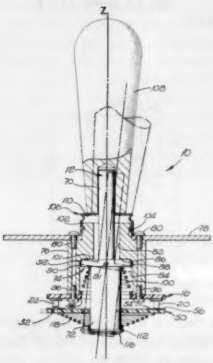
3,835,270

JOY STICK CONTROL MECHANISM WITH MOVABLE PRINTED CIRCUIT SWITCH ASSEMBLY CONTROLLING MOTOR INPUT POWER POLARITY

Webster J. Dufresne, Costa Mesa, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed June 4, 1973, Ser. No. 366,705
Int. Cl. H01h *19/58, 21/78*
U.S. Cl. 200—6 A **23 Claims**

A control mechanism is disclosed embodying a pivot snatt which controls the supply of power to an electric motor, such as utilized for rotating revolving searchlights. A universal pivotal mounting arrangement is provided for the pivot shaft which does not require a conventional ball and socket joint. When the shaft is pivoted in one direction, it shifts a free-floating printed circuit board to energize the motor. When the



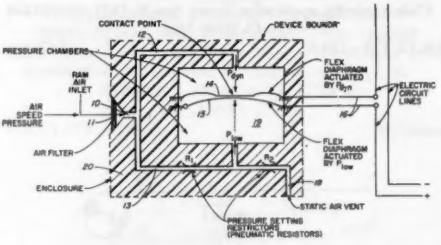
shaft is pivoted in the opposite direction, the printed circuit board effects reversal of the polarity of the input power to the motor. In the preferred embodiment, the pivot shaft is pivotal about perpendicularly extending axes to control two electric motors simultaneously whereby a searchlight may be rotated both vertically and horizontally at the same time.

3,835,271

ENVIRONMENTAL FLUIDIC SWITCHING DEVICE WITH PLURAL DIAPHRAGMS

Abram J. Garrett, Canoga Park, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 20, 1973, Ser. No. 389,859
Int. Cl. H01h *35/34*
U.S. Cl. 200—83 Y **6 Claims**



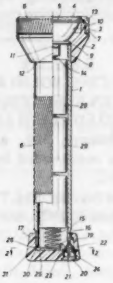
A fluidic switching device operating directly on ram air pressure differences to perform an electrical switching function. Operation is based upon the actuation of a micro switch by fluidic signal pressure acting against a flexible diaphragm and plate. The arrangement is self-compensating for altitude changes.

3,835,272

ROTARY SCREW SWITCH

Edward M. Wisenbaker, 4814 Beau Ln., Houston, Tex. 77039

Filed Apr. 19, 1973, Ser. No. 352,528
Int. Cl. H01h *3/40*; F21v *23/04*
U.S. Cl. 200—60 6 Claims



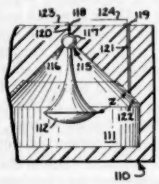
A flashlight is described having a switch which employs two existing components of conventional flashlights in such a manner as to eliminate a separate thumb switch, but which retains the function of the separate switch. The switch employs the threaded end cap of the flashlight which is tightened to make contact between the barrel of the flashlight and loosened to break the circuit. The tube or barrel of the flashlight serves as one conduit and a spring used to bias the batteries is the other. The circuit is closed by bringing the barrel into contact with a portion of the spring. The switch has other application than to flashlights.

3,835,273

PENDULUM-TYPE INERTIA SENSOR SWITCH

Eugene Stolarik, Minneapolis, Minn., assignor to Control Techniques Corporation, Minneapolis, Minn.

Filed Feb. 2, 1973, Ser. No. 329,062
Int. Cl. H01h *35/14*
U.S. Cl. 200—61.48 9 Claims



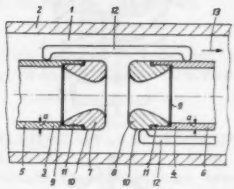
A multi-directional crash sensor for triggering air bag safety devices on a vehicle, having different response thresholds to accelerations from different directions. A pendulum having one electrical contact is pivoted within a housing for motion in any direction in response to acceleration. A second contact is positioned around the pendulum and is configured so that the angular displacement from the pendulum's nominal position to the second contact is different for different directions of motion of the pendulum. A non-conductive membrane having a predetermined puncture resistance may be placed over the contact and the pendulum may be provided with sharp protrusions for piercing the membrane to make electrical contact only when accelerations of predetermined magnitude occur.

3,835,274

CONTACT SYSTEM FOR A HIGH-VOLTAGE CIRCUIT BREAKER

Heiner Marin, Berlin, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed June 4, 1973, Ser. No. 366,541
Claims priority, application Germany, June 20, 1972, 2230927
Int. Cl. H01h *33/82*
U.S. Cl. 200—148 R 4 Claims



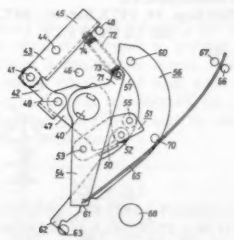
A contact system for a high-voltage circuit breaker of the compressed-gas type or the like defines a gap across which an arc is drawn when the breaker is switched to the open position. The contact system includes at least one hollow, nozzle-shaped contact piece which defines one end of the gap when the breaker is switched to the open position. The contact piece includes an electrically conductive tubular member made of cold work-hardened copper. A nozzle-shaped body made of arc-resistant graphite is cold press-fitted into the tubular member at an end portion thereof so as to be held in surrounding engagement thereby in a friction-tight manner.

3,835,275

ELECTRIC POWER CIRCUIT BREAKER EQUIPPED WITH A LATCHING MECHANISM WHEREIN RESTORING FORCES ARE PROVIDED AS A FUNCTION OF SWITCHING SHAFT POSITION

Bernhard Preuss, Berlin, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Apr. 18, 1973, Ser. No. 352,202
Claims priority, application Germany, Apr. 19, 1972, 2219892
Int. Cl. H01h *3/38*
U.S. Cl. 200—153 SC 8 Claims



An electric power circuit breaker is disclosed wherein the latching mechanism as well as other parts which affect the motion of the contacts are returned by restoring forces to their initial position after the breaker is opened. The restoring forces are made ready in dependence on the position of the switching shaft of the breaker and are smaller in the closed position of the switching shaft than in the open position thereof. The invention is suited particularly for low-voltage power circuit breakers for high rated currents wherein the economic configuration of the required springs is of importance.

3,835,276

ELECTRIC SWITCHES

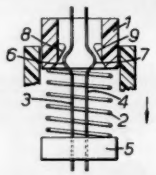
John Rosslyn Field, Fareham, England, assignor to Plessey Handel Und Investments A.G., Zug, Switzerland

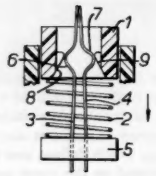
Filed Jan. 18, 1973, Ser. No. 324,795

Claims priority, application Great Britain, Jan. 19, 1972, 2684/72

Int. Cl. H01h *13/52*

U.S. Cl. 200—160 1 Claim





A push-button switch comprises a springy wire which constitutes a switch contact and is so shaped and arranged that in response to the depression of the push-button which is spring-biased a cam deflects the switch contact whereby the contact makes momentary contact with another switch contact to provide contacts closure. Thereafter during the depression of the push-button the first mentioned switch contact disengages from the other wire contact and the cam is shaped so that as the push-button restores to its unoperated position under the action of its biasing spring the springy wire switch contact is deflected without the momentary switching action being repeated.

3,835,277

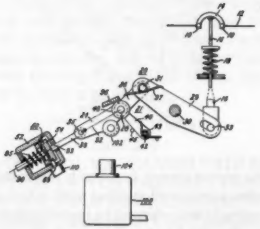
CIRCUIT BREAKER OPERATING MECHANISM WITH HIGH-SPEED LOW-ENERGY TRIPPING MEANS

Klaus M. Skreiner, Media, Pa., assignor to General Electric Company, Philadelphia, Pa.

Filed Sept. 14, 1973, Ser. No. 397,242

Int. Cl. H01h *9/20*

U.S. Cl. 200—318 4 Claims



A circuit breaker operating mechanism comprises two toggle links pivotally interconnected at a knee. One of the toggle links is coupled to a contact-actuating member, and the other is pivotally supported on a pivot pin spaced from the knee. Latching means normally holds the pivot pin in a fixed position but is releasable to release said pivot pin and thus render the toggle links incapable of holding the contact-actuating member in its closed position. The latching means comprises a piston, a cylinder in which the piston is reciprocable, means for mounting said pivot pin on the piston, and a ring latch around the outer periphery of the piston normally latching the piston to the cylinder. The ring latch is operable to release the piston from latching relationship with the cylinder, thus releasing the pivot pin and initiating circuit-breaker opening.

3,835,278

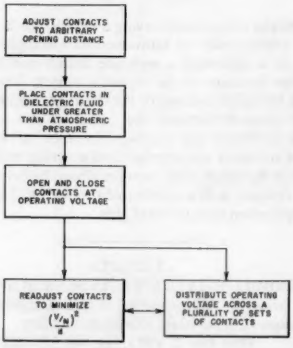
METHOD OF REDUCING SOLID ARCING PRODUCT BUILD-UP BETWEEN ELECTRICAL CONTACTS IN PRESSURIZED FLUID AMBIENTS

Walter E. Pocock, Baltimore, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation-in-part of Ser. No. 316,778, Dec. 20, 1972. This application June 5, 1973, Ser. No. 367,254

Int. Cl. H01h *1/34*

U.S. Cl. 200—249 6 Claims


ADJUST CONTACTS TO ARBITRARY OPENING DISTANCE
PLACE CONTACTS IN DIELECTRIC FLUID UNDER GREATER THAN ATMOSPHERIC PRESSURE
OPEN AND CLOSE CONTACTS AT OPERATING VOLTAGE
READJUST CONTACTS TO MINIMIZE $(V/N)^2/d$
DISTRIBUTE OPERATING VOLTAGE ACROSS A PLURALITY OF SETS OF CONTACTS

A method of substantially reducing the build-up of solid arcing products between contacts for making and breaking electrical circuits including the steps of adjusting the contacts to an arbitrary opening distance at which arcing will occur, placing the contacts in the dielectric fluid under greater than atmospheric pressure, opening and closing the contacts at a fixed operating circuit voltage to determine if the solid arcing product build-up forms, and readjusting the contact opening distance to minimize the value of the parameter $(V/N)2/d$ where V is the operating circuit voltage, N is the number of sets (or pairs) of serially connected contacts and d is the distance between the contacts when in the fully open position. The value of the parameter may be further reduced by distributing V across a plurality of sets (or pairs) of such contacts connected in series and provided to be simultaneously actuated.

3,835,279

ELECTRICAL SWITCH WITH ADJUSTABLE ACTUATING ARM

Gordon C. Andreas, St. Louis, Mo., assignor to UMC Industries, Inc., St. Louis, Mo.

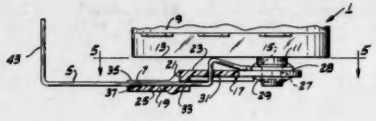
Filed June 26, 1973, Ser. No. 373,788

Int. Cl. H01h *3/06*

U.S. Cl. 200—332 7 Claims

An electrical switch provided with a pivotally mounted primary actuating arm and an auxiliary arm conjointly movable

with the primary arm for actuating the switch and also adjustably movable relative to the primary arm, and means engageable with the auxiliary arm to provide preselected adjusted positions beween which the auxiliary is adjustably movable.



3,835,280

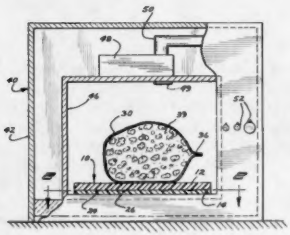
COMPOSITE MICROWAVE ENERGY PERTURBATING DEVICE

Larry D. Gades; Lawrence C. Brandberg, and Roger A. Gorman, all of Minneapolis, Minn., assignors to The Pillsbury Company, Minneapolis, Minn.

Filed Feb. 1, 1973, Ser. No. 328,585

Int. Cl. H05b *9/06*

U.S. Cl. 219—10.55 **5 Claims**



For the purpose of concentrating microwave energy to a central point or other desired location in a microwave oven, a composite signal perturbating device is placed in the oven. It consists of a sheet of a low loss dielectrical material together with a layer of microwave reflecting material. The device is placed on the floor of the oven and on the opposite side of the product heated from the source of microwave energy. The low loss dielectric consists, for example, of a flat sheet of dielectric material having two sheets of aluminum foil imbedded therein as concentric rings positioned in a plane parallel to the floor of the oven chamber and spaced from about ¾ of an inch to one inch below the product that is to be heated.

3,835,281

DIFFERENTIAL MICROWAVE HEATING CONTAINER

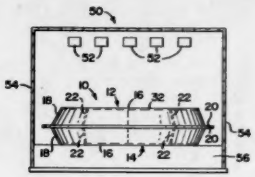
Frank L. Mannix, 20 Beechcraft Rd., Newton, Mass.

Filed July 5, 1973, Ser. No. 376,677

Int. Cl. H05b *9/06*; B65d *1/24*; A45c *11/20*

U.S. Cl. 219—10.55 **8 Claims**

A differential heating container for cooking food contained therein with microwave radiation comprising an upper and lower container element each including a plurality of ribs which form a plurality of corresponding pockets such that when the container elements are placed together, the corresponding pockets cooperatively form individual food compartments isolated from one another. Opposite sides of each compartment include equal amounts of microwave opaque area which determine the heating effects of the microwave radiation for each individual compartment independent of the remaining compartment. Locking means are formed on the ribs to cooperatively interlock the upper and lower container elements together as an integral differential heating container.



3,835,282

INDUCTION HEATING APPARATUS FOR HEATING THE MARGINAL EDGE OF A DISK

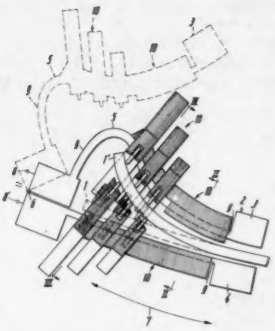
Jochen Sass, Meckelfeld, and Rolf Esche, Spardorf, both of Germany, assignors to Ottensener Eisenwerk GmbH, Hamburg, Germany

Filed Jan. 31, 1973, Ser. No. 328,483

Claims priority, application Germany, Jan. 31, 1972, 2204343

Int. Cl. H05b *5/08*

U.S. Cl. 219—10.57 **13 Claims**



Induction heating apparatus for heating the marginal edge of a disk as the latter is deformed to produce a peripheral flange, incorporates ferromagnetic means located on both sides of the marginal edge of the disk, such means being adapted to move as the disk is deformed, for maintaining a relatively constant magnetic path through the marginal area of the disk during its deformation.

3,835,283

PARTITION AND FRONT WALL FORMING CHOKE STRUCTURE FOR A MICROWAVE OVEN

Ryuji Suzuki, Kitakatsuragi, Japan, assignor to Matsushita Electric Co., Ltd., Osaka, Japan

Continuation of Ser. No. 119,628, March 1, 1971, abandoned. This application June 15, 1973, Ser. No. 370,379

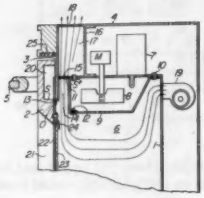
Claims priority, application Japan, Mar. 3, 1970, 45-18578

Int. Cl. H05b *9/06*

U.S. Cl. 219—10.55 **6 Claims**

An electromagnetic-wave seal in a high-frequency heating equipment, comprising a first electromagnetic-wave labyrinth which has its terminal short-circuited either to a front port of a heating chamber or to a door and which is approximately equal in total length to an integral times a half-wavelength of

the fundamental wavelength, and a second electromagnetic-wave labyrinth which has its terminal short-circuited to the vicinity of an inlet of said first electromagnetic-wave labyrinth



and which is approximately equal in total length to an odd number times the quarter-wavelength of the fundamental wavelength, thereby efficiently preventing leakage of electromagnetic-waves.

3,835,284

MEANS FOR SURFACE TREATING AND WELDING TO A METAL

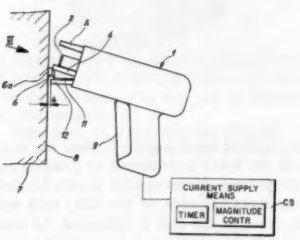
Norbert Gstohl, Eschen, and Dankmar Tauern, Triesenberg, both of Liechtenstein, assignors to Hilti Aktiengesellschaft, Schaan, Liechtenstein

Division of Ser. No. 132,040, April 7, 1971, Pat. No. 3,701,879. This application June 23, 1972, Ser. No. 265,518

Claims priority, application Germany, Apr. 13, 1970, 2017655

Int. Cl. B23k *9/00, 11/04*

U.S. Cl. 219—98 **14 Claims**



The surface of a metal workpiece, to which a capacitor discharge stud welding gun is to weld a stud, is precleaned by discharging the gun while it holds a tungsten or other high-melting-point electrode against the workpiece. This passes a stud-welding current pulse through the electrode and the workpiece. It causes a short explosive heating effect that tears up the surface of the workpiece and rips away the thus loosened contamination. It produces a clean metal surface whose extent corresponds to the diameter of the electrode. The magnitude and duration of the pulse are such as to have welded a stud with a lower melting point to the metal. The tungsten electrode may be replaced with titanium, niobium, zirconium, molybdenum etc. These have lower melting points and produce slight surface diffusion of these materials into the metal to form desirable alloys.

3,835,285

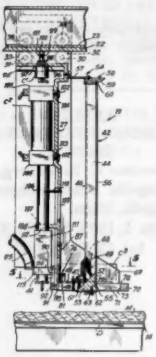
AUTOMATIC RESISTANCE WELDER

Milton Hinden, and Charles Giannone, both of North Babylon, N.Y., assignors to Duro-Dyne Corporation, Farmingdale, N.Y.

Continuation-in-part of Ser. No. 281,205, Aug. 16, 1972, Pat. No. 3,762,541. This application Jan. 12, 1973, Ser. No. 323,099

Int. Cl. B23k *9/00, 11/04, 9/12*

U.S. Cl. 219—98 **5 Claims**



The present invention relates to an automatic resistance welding apparatus for securing insulation material to air conditioning ducts by means of headed metal clips or pins advanced through the insulation material and welded to the ducts. The apparatus includes a grounded support surface on which the metallic duct material is mounted and a welding head mounted on a guide rail in spaced parallel relation to the support surface.

The welding head assembly includes a welding electrode shiftable toward and away from the surface. An operator handle is provided on the welding head, manipulation of the handle being effective to shift the welding head along the rail and, when the head achieves a selected position, to trigger a welding cycle.

The apparatus is characterized by a brake assembly interposed between the rail and the welding head assembly, activation of the apparatus through a welding cycle being preceded by energizing of the brake assembly whereby the position of the welding head relative to the rail is fixed in advance of movement of the weld clip into contact with the insulation or workpiece, and is maintained in such fixed position during formation of the weld.

3,835,286

WELDING ELECTRODE STRUCTURE AND FILLER WIRE MECHANISM FOR AN AUTOMATIC WELDING APPARATUS

Gasparas Kazlauskas, North Hollywood, Calif., assignor to Astro-Arc Co., Sun Valley, Calif.

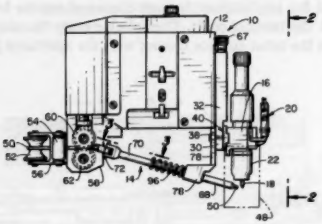
Filed June 11, 1973, Ser. No. 368,767

Int. Cl. B23k *9/12*

U.S. Cl. 219—130 **5 Claims**

In an automatic welding apparatus wherein the welding electrode is to move longitudinally in a prescribed path to produce a weld bead upon a workpiece, the welding electrode and welding electrode housing being pivotally mounted in respect to the welding apparatus housing, a shaft interconnecting the welding electrode housing and the welding apparatus housing, the shaft being movable in predetermined increments to effect precise angular movement of the welding

electrode housing with respect to the welding apparatus housing, a filler wire mechanism being universally mounted in



respect to the welding apparatus housing, a portion of the filler wire mechanism being pivotal along with the welding electrode housing.

3,835,287

APPARATUS FOR AUTOMATIC ELECTRIC ARC WELDING

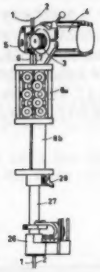
Sven Jonas Roland Jonsson, 11, Manstigen, S-695 00, Laxa, Sweden

Filed June 28, 1973, Ser. No. 374,758

Claims priority, application Sweden, June 30, 1972, 8644/72

Int. Cl. B23k *9/12*

U.S. Cl. 219—130 **3 Claims**



A welding head for automatic electric arc welding with a bare, fusible electrode having a circular cross-section, comprising a wire advancing mechanism, a welding nozzle, and a wire straightening assembly arranged between said wire advancing mechanism and said nozzle, said assembly consisting of two aligned units operating in planes at right angles to each other.

3,835,288

ARC-WELDING ELECTRODE

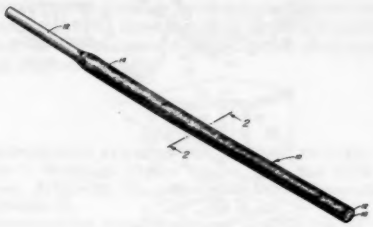
Harold R. Henderson, 152 Lenwood Dr., Lancaster, Ohio 43130

Filed Nov. 5, 1971, Ser. No. 196,050

Int. Cl. B23k *35/00*

U.S. Cl. 219—145 **2 Claims**

An underwater electrode comprising generally cylindrical hollow-elongate electrically conducting substrate coated with an insulating material that is self-extinguishing when ignited by an arc. The coating is of a thickness and strength so that it burns away as the substrate is consumed forming a slight cone-shaped protective extension at the end of the substrate where



the arc is struck to a workpiece. A preferred coating is a pre-catalyzed thermosettable epoxy resin placed on an uncoated substrate.

3,835,289

ELECTRODE FOR ARC WELDING

Nikolai Ivanovich Kakhovsky, pereulok Mechnikova, 3, kv. 1; Anatoly Nikolaevich Vakulenko, ul. Engelsa, 3, kv. 54; Leonid Stepanovich Zakharov, ul. Karla Marxa, 4, kv. 6; Vladimir Nikolaevich Lipodaev, pereulok Mechnikova, 4, kv. 27; Vladimir Grigorievich Fartushny, Sapernoe pole 28, kv. 15; Jury Nikolaevich Kakhovsky, pereulok Mechnikova, 3, kv. 1, all of Kiev; Vily Arsentievich Boiko, ul. Kirova, 104/6, kv. 1, Sumy; Zinovy Abramovich Sidlin, ul. vavilova, 45, kv. 21, Moscow, and Konstantin Andreevich Juschenko, Sapernoe pole, 28, kv. 30, Kiev, all of U.S.S.R.

Filed Oct. 12, 1972, Ser. No. 296,816

Claims priority, application U.S.S.R., Feb. 3, 1972, 1740244; Sept. 9, 1970, 1473314

Int. Cl. B23k *35/22*

U.S. Cl. 219—146 **22 Claims**

An electrode for arc welding, comprising a core based on iron with alloying additives of chromium, nickel and titanium, and a coating consisting of fluorite, rutile concentrate, iron powder, chromium and mica. In addition to the above components, said coating also contains magnesite, ferrotitanium and ferroniobium that ensure high plasticity and resilience to the deposited metal, the latter thus being resistant to the formation of pores and hot cracks.

3,835,290

MAGNETICALLY SUPPORTED VEHICLE ENGINE WARMER

Raymond W. Peters, Rt. 3, Box 192, Arcadia, Wis. 54612

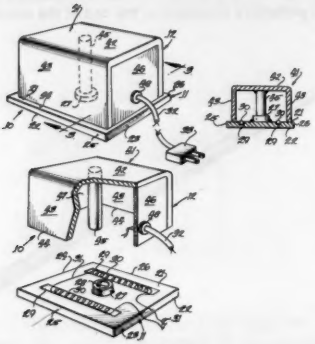
Filed Dec. 5, 1973, Ser. No. 421,767

Int. Cl. H05b *1/00*

U.S. Cl. 219—205 **4 Claims**

An electric engine warming heater adapted to be magnetically secured to any selected portion of a vehicle engine. The heater includes a flat base member, which may be of magnetic material, having a top surface provided with slots in which are disposed electric heating coils. A housing secured to the top of base member covers encloses the heating coils. The top and two opposite sidewalls of the housing are formed by a permanent horse-shoe magnet. The other sidewalls of the housing are formed by flat plates secured to the legs of the horse-show

magnet. A cyclindrical bar magnet is secured to the base portion of the horse-shoe magnet and projects downwardly



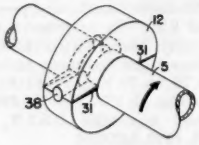
therefrom into the center of a ring-shaped magnet secured to the base member.

3,835,291

ELECTRON BEAM WELDING MACHINE WITH SPLIT SEAL MEANS

David Sciaky, Chicago, Ill., assignor to Welding Research, Inc., Chigago, Ill.

Filed Feb. 16, 1973, Ser. No. 332,915
Int. Cl. B23k *15/00*
U.S. Cl. 219—121 EB **8 Claims**



A sealing device for sealing cylindrical objects passing through a wall of a vacuum chamber and which are to be rotated about their longitudinal axes comprising a two part annular resilient seal separable along a plane passing through a diameter of the seal. The parts are installed one on each section of a wall of the chamber which has been split into two parts which may be moved in relation to one another so that when the wall sections are separated the seal parts are separated and the inside of the vacuum chamber is accessible so that the cylindrical objects may be positioned part inside the chamber and the remainder extending outside the chamber. When the wall sections are brought to the closed position the seal parts meet along the plane and surround the cylinder so as to form an effective vacuum seal between wall and cylinder. Means are provided in the resilient seal for preventing leakage of air into the chamber along the interface between the two seal parts when the cylindrical objects are in rotation.

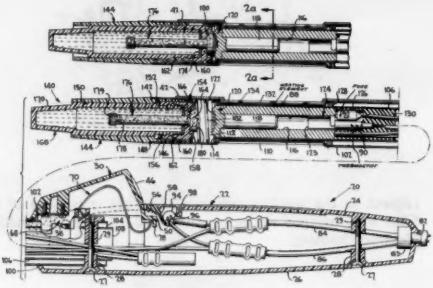
3,835,292

STEAM CURLING IRON

Henry J. Walter, Wilton; John H. Kronheim, Stamford, and Harvey Levine, Fairfield, all of Conn., assignors to Clairol, Incorporated, New York, N.Y.

Filed Feb. 28, 1973, Ser. No. 336,676
Int. Cl. H05b *1/00*; **A45d** *1/02, 2/36*
U.S. Cl. 219—222 **20 Claims**

A steam curling iron having a tubular body with apertures therein, a heating element disposed in a heating chamber in the tubular body, and a fluid dispensing device mounted at one end of the tubular body including a reservoir for storing a fluid and a metering mechanism for supplying a metered quantity of the fluid from the reservoir to the heating chamber such that the heating element evaporates a predetermined amount of fluid for application through the apertures to hair wound around the tubular body. The tubular body has axial depressions in the outer surface thereof with the apertures positioned



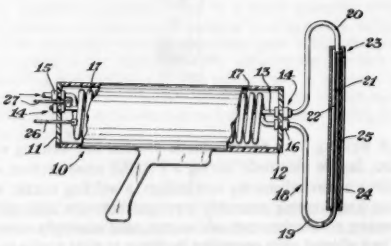
in the axial depressions to emit steam tangentially of the tubular body, and a clip extends along the tubular body for holding the ends of a tress of hair wound around the tubular body, the clip being mounted in a housing at an end of the tubular body opposite the fluid dispensing device to be pivotally biased against the tubular body and to be movable away from the tubular body in a direction transverse to the longitudinal axis of the tubular body to permit hair wound around the tubular body to be axially removed therefrom.

3,835,293

ELECTRICAL HEATING APPARATUS FOR GENERATING SUPERHEATED VAPORS

Dale L. McAlister, 4314 Jefferson, Midland, Mich. 48640

Filed Sept. 17, 1973, Ser. No. 398,047
Int. Cl. H05b *3/42*; **B05b** *1/24*; **F22g** *1/16*
U.S. Cl. 219—300 **1 Claim**



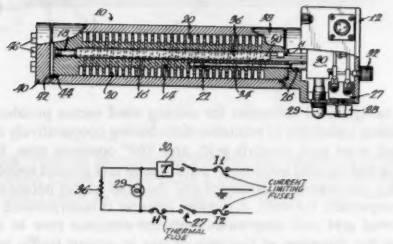
An improved apparatus for generating superheated vapors of vaporizable organic liquids having a novel superheating section capable of delivering a wide swath of superheated vapors. The new section is substantially a loop of electrical resistance tubing connected to the vapor generating section of a mobile or hand-held electrical resistance tube heater. The loop is hollow through about two-thirds of its length, the remainder, the return to the electrical circuit, being solid. The tubular portion of the superheater has a plurality of perforations in a substantially straight section, which section is surrounded by a slotted housing for directing the vapors entering the housing from the perforated tube.

3,835,294

HIGH PRESSURE ELECTRIC FLUID HEATER

Duane D. Krohn, and Samuel W. Culbertson, both of Arvada, Calif., assignors to Binks Manufacturing Company, Franklin Park, Ill.

Filed Apr. 6, 1973, Ser. No. 348,484
Int. Cl. H05b 1/02; B05b 1/24; F24h 1/12
U.S. Cl. 219—305 1 Claim



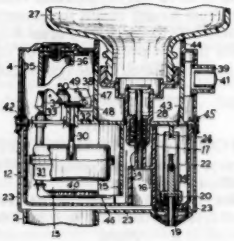
A compact and easily cleaned high pressure heater for paint and the like includes a cylindrical core having a continuous spiral groove in the outer surface. A cylindrical cover having open ends is disposed around and in axially slidable engagement with the core to define with the groove a closed end spiral passageway. A fluid inlet and outlet to the passageway are provided at opposite ends of the cover and the cover is held between a removable end cap secured to one end of the core and a control box attached to the other end thereof. An electric heating element is enclosed in the core and has a pair of leads adapted for connection to a power supply. A thermostat having a sensing element disposed in the core is located in the control box. A current limiting fuse is provided in each of the heater leads and a thermal fuse is provided to protect the heater in the event the thermostat should fail.

3,835,295

WATER HEATER

Aldo Ronchese, 20 Saint Johns Rd., Houghton, Johannesburg, South Africa

Filed Sept. 5, 1972, Ser. No. 286,427
Int. Cl. H05b 1/02; F24h 1/24; B67d 5/62
U.S. Cl. 219—314 14 Claims



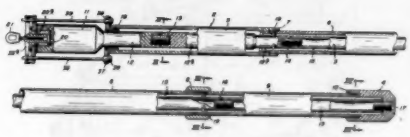
A water heater for heating predetermined variable quantities of water and dispensing the exact predetermined quantity at substantially the boiling temperature includes a heating compartment having its bottom connected to the top of a second compartment. A heating element is provided in the heating compartment. The heating compartment is connected to a constant level water supply means. A movable float in the heating compartment is latched in a first position whereby it displaces a predetermined quantity of water. The float can be released for movement to a selected second position determined by a variable stop means wherein the quantity of water displaced by the float is decreased. The selected second position determines the quantity of water to be heated. Movement of the float from the first to the second position activates a switch to energize the heating element. The heated water is transferred through a passage from the bottom of the heating compartment into the upper part of the second compartment and may be then dispensed from the second compartment through a siphonic dispenser.

3,835,296

INDUSTRIAL ELECTRIC RESISTANCE HEATER

William V. Middough, Shaker Heights, Ohio, and Louis H. Jaquay, Bridgeville, Pa., assignors to Dravo Corporation, Pittsburgh, Pa.

Division of Ser. Nos. 234,689, Jan. 27, 1972, Pat. No. 3,764,718, Continuation of Ser. No. 29,150, April 16, 1970, abandoned. This application Oct. 1, 1973, Ser. No. 402,092
No. 402,092
Int. Cl. H05b 3/10
U.S. Cl. 219—553 9 Claims



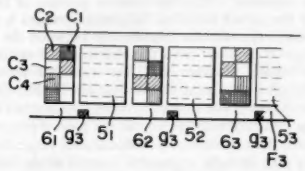
An electric resistance heater for industrial use with high heat emmisitivity per unit of length and low energy loss has coaxially-extending non-magnetic resistance units with a terminal end and an end opposite the terminal ends where the two conductors, otherwise electrically separate, are joined, thereby connecting them in series. At the terminal end the inner conductor projects through an enlargement of the outer conductor and has an exposed terminal portion of the same diameter as the enlarged terminal end of the outer conductor.

3,835,297

MICROFILM PROVIDED WITH COLOR CODES AND DEVICE FOR RECORDING AND REPRODUCING SUCH CODES

Mutshuiro Inoue, 4100-2, Isobe, Kanagawa-ken, Sagamihara-shi, and Shunzo Inoue, 4-45-17, Minami Magome, Ohta-ku, Tokyo, both of Japan

Continuation of Ser. No. 111,057, Jan. 29, 1971, abandoned. This application May 9, 1973, Ser. No. 358,485
Claims priority, application Japan, Feb. 5, 1970, 45-10141
Int. Cl. G06k 19/06, 7/12; G01n 21/30; G01d 15/14
U.S. Cl. 235—61.11 E 4 Claims



The invention consists in a microfilm provided with color index codes of at least two colors other than the colors for

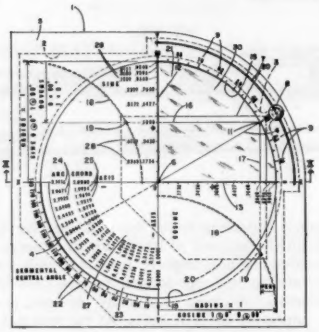
recording information on the microfilm, to thereby increase the facility to search for the index codes and accordingly a desired type of information recorded in the recording frames of the microfilm represented by such color codes. The invention also consists in a code recording device for additionally forming the said color index codes on a photographed microfilm in a light environment, and a reproducing device for reproducing the color index codes formed on the photographed microfilm.

3,835,298

DEVICE FOR DEMONSTRATING AND CALCULATING MATHEMATICAL FUNCTIONS

Joseph D. DeAndrea, 349 S. Aiken Ave., Pittsburgh, Pa. 15232

Filed Aug. 15, 1973, Ser. No. 388,460
Int. Cl. G06g *1/00*
U.S. Cl. 235—61 GM **5 Claims**



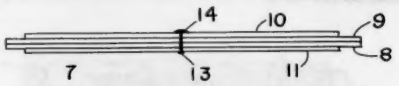
A device for demonstrating and calculating mathemetical functions comprising a planar member having a unit circle inscribed thereon and a 90° angular scale associated therewith to indicate the angle of an arc measured within one quadrant of the unit circle. The planar member also includes perpendicularly extending ordinate and abscissa axes positioned with their point of intersection at the origin of the unit circle. Numerical indicia are associated with each axis to indicate sine, cosine, versine and coversine values. A cursor member carrying a radius vector hairline inscribed thereon is pivotally mounted within the open interior of the planar member at the origin of the unit circle with the radius vector hairline passing through the origin. A flat, transparent indicator member having two intersecting perpendicular hairlines inscribed thereon is pivotally mounted within the interior portion of the planar member to the cursor member. Alignment means is provided to maintain a perpendicular relationship between the hairlines of the indicator member with the abscissa and ordinate axes when said cursor member and flat indicator member are moved through a quadrant of the unit circle thus permitting visual observation of the sine and cosine values of an inscribed angle at the points of intersection of the pair of perpendicular hairlines with the ordinate and abscissa axes respectively. My device may also include segmental central angle indicia, arc indicia and chord indicia whereby the segmental central angle of any inscribed angle within a quadrant of the unit circle may be determined along with the length of arc and length of chord for said segmental central angle.

3,835,299

NAVIGATIONAL COMPUTERS

Peter Baldwin Turney, 1405 Forest Park Ave., Baltimore, Md. 21207

Filed Sept. 21, 1973, Ser. No. 399,432
Int. Cl. G06c *27/00*; G06g *1/08*
U.S. Cl. 235—61 NV **7 Claims**



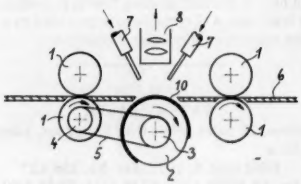
A navigational computer for solving wind vector problems including a plurality of rotatable discs having cooperatively arranged wind grid, aircraft grid, and 360° compass rose, for setting and reading air speeds, wind speeds and ground speeds, and for calculating drift angles and the crab angles necessary to compensate for drift. A runway orienter is incorporated in the wind grid and cooperates with the compass rose to indicate the direction of the various legs in airport traffic patterns.

3,835,300

WEB-READING SYSTEM WITH REPLACEABLE DRUM

Siegmar Donner, Augsburg, Germany, assignor to Fa. Kleindienst & Co., Augsburg, Germany

Filed Oct. 12, 1972, Ser. No. 296,961
Claims priority, application Germany, Nov. 24, 1971, 2158302
Int. Cl. G06k *7/10*
U.S. Cl. 235—61.11 E **2 Claims**



The invention relates to a drum which is removable from conveying means in an optical or electronic reading system for documents, the drum having means for mounting on its surface a test document so that when the drum is replaced in the conveying means the test document can be constantly read whereby faults can be detected or the system can be adjusted.

3,835,301

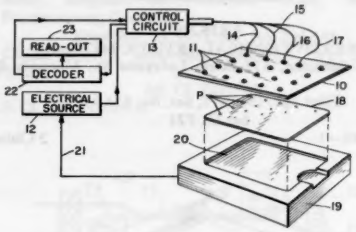
CARD CODING AND READ-OUT SYSTEM

Walter W. Barney, Encino, Calif., assignor to Paul W. Helert, El Cajon, Calif., a part interest

Filed Feb. 21, 1973, Ser. No. 334,197
Int. Cl. G06k *1/02*; G01d *15/08*; G06k *7/06*; G06f *5/02*; G06k *19/06*
U.S. Cl. 235—61.11 A **2 Claims**

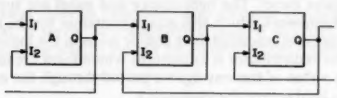
A card may be provided with an invisible code and the same apparatus employed for coding the card can be used to read back the code on the card and convert it to a display of information defined by the code. The coding of the card is accomplished by subjecting selected points of the card to a high voltage which causes a current to flow through the selected points and render them more conductive than remaining portions of the card. The selected points rendered more conductive are invisible to the naked eye and the physical appearance of the

card is in no way impaired. In reading out the code, a lesser voltage is applied to all points on the card and only those



points rendered more conductive will pass current to provide electrical signals for operating a suitable read-out, print-out, computer input, or for otherwise retrieving the information.

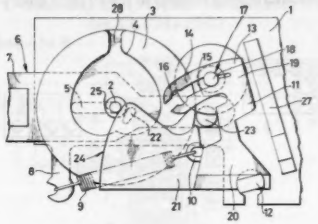
3,835,302
RING-COUNTER
Kenneth K. Au, Ottawa, Ontario, Canada, assignor to Microsystems International Limited, West Montreal, Quebec, Canada
Filed Feb. 15, 1973, Ser. No. 332,542
Claims priority, application Canada, Dec. 29, 1972, 160227
Int. Cl. H03k *27/00*
U.S. Cl. 235—92 NG **28 Claims**



A ring counter having a number of series connected elements, each element having a feedback path to the preceding element and a feed-forward path to the succeeding element. For error-free operation, regardless of noise occurring at any input within the counter, each element requires (n-2) feedback paths associated therewith, "n" being the number of elements within the counter.

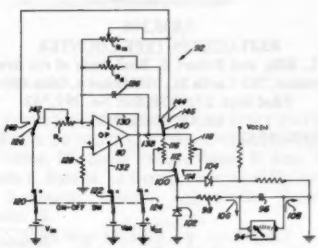
3,835,303
RESET DEVICE FOR DIGIT DRUMS IN COUNTERS
Hans Gunter Krauss, Vohrum, Germany, assignor to Elmeg-Elektro-Mechanik GmbH, Peine, Germany
Filed Jan. 22, 1973, Ser. No. 325,393
Claims priority, application Germany, Jan. 24, 1972, 2203257
Int. Cl. G06c *15/42*
U.S. Cl. 235—144 HC **11 Claims**

A reset device for resetting the digit drums of a counter wherein the drums are coupled by transfer pinions mounted on a shaft which is movable to disengage the transfer pinions from the digit drums during the resetting of the digit drums by reset fingers acting on heart-shaped cams associated with the digit drums, the reset device including a resilient element which is movable with the reset fingers, is engageable with the shaft and defines two stop positions of the shaft relative thereto, the positions being such that on operation of the device the shaft in one stop position is initially moved with the resilient element to disengage the transfer pinions from the digit drums, on further movement of the resilient element during which the reset fingers act on the cams to reset the digit drums, the shaft abuts a stop and the resilient element moves relative thereto to move the shaft into the other stop position, and during the reverse movement of the resilient element the shaft in the other stop position is moved back to reengage the



transfer pinions with the digit drums and is thereafter moved relative to the resilient element back into the one stop position thereof.

3,835,304
CHEMICAL MIGRATION RATIO INSTRUMENT
Sylvia Martinez, 1111 Pizarro St., Coral Gables, Fla. 33134
Filed Dec. 19, 1972, Ser. No. 316,552
Int. Cl. G01n *33/00*; **G06g** *7/16*
U.S. Cl. 235—151.3 **20 Claims**

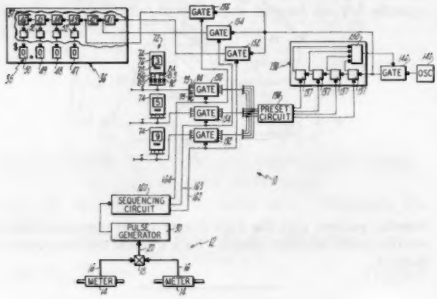


An instrument for calculating chemical migration ratios or the like on a test surface, said instrument comprising a pointer adapted to overlie the test surface, control means for moving the pointer to selected locations relative to the test surface, circuit means associated with the control means for providing electrical signals representative of the position of the pointer relative to the test surface, and meter means responsive to the electrical signals for providing readings corresponding to the pointer positions. The circuit means may include memory means for storing the readings for comparison with subsequent readings.

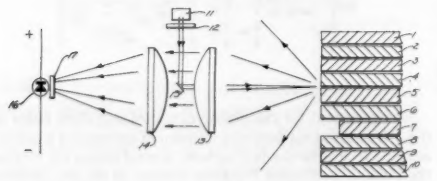
3,835,305
COMPUTING DEVICE
Crawford M. Kus, Vernon, Conn., assignor to Veeder Industries Inc., Hartford, Conn.
Continuation of Ser. No. 64,278, Aug. 17, 1970, Pat. No. 3,696,236. This application Aug. 18, 1972, Ser. No. 281,637The portion of the term of this patent subsequent to Oct. 3, 1989, has been disclaimed.
Int. Cl. G06f *15/56, 7/52*
U.S. Cl. 235—151.34 **2 Claims**

A computing device for a multiple product gasoline dispensing system having a cost counter for accumulating the cost of gasoline dispensed, a bank of three price decade switches for each gasoline product settable for establishing the

amounts of the three places respectively of a three place unit volume price, and a pulse generator for generating a pulse for each one-hundredth of a unit volume of gasoline dispensed. A sequencing circuit is operated by each pulse to sequentially set a binary predetermining counter at the straight binary complement of the amount established by each decade switch for the gasoline product being delivered and an oscillator is gated to index the predetermining counter from such setting to a maximum count and simultaneously index the cost counter to enter such amount into the cost counter at a level corresponding to its order of significance in unit volume price.

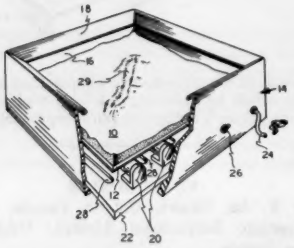


3,835,306
REFLECTION-TYPE COUNTER
Thomas L. Bills, and Robert E. Boni, both of c/o Armco Steel Corporation, 703 Curtis St., Middletown, Ohio 45042
Filed Sept. 27, 1972, Ser. No. 292,762
Int. Cl. G06m 9/00
U.S. Cl. 235—92 SB **18 Claims**



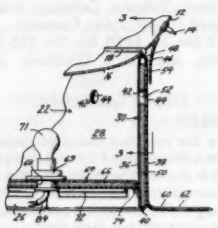
A reflection-type counter for counting a plurality of adjacent edges of reflective material as for example the number of convolutions in a coil of reflective material or the number of sheets in a stack of sheets of reflective material. The counter comprises a light source and means for focusing a beam of light of elliptical cross section from the source onto the edges being counted, the elliptical beam having a minor axis less than the width of the edges upon which it is focused. The beam is so oriented with respect to the edges being counted that both the angle of incidence and the angle of reflectance are substantially perpendicular to the edges being counted. The reflected beam is directed to a photo detector. The voltage output of the photodetector increases as the intensity of the light striking the detector increases. Thus the voltage output of the photodetector is greater when the light beam passes over an edge of the reflective material than when it passes over an interface between edges. Means are provided to process the voltage output of the photodetector into a digital signal. The number of times the signal drops below a predetermined level is counted and displayed. The electronics are such that the number displayed is equal to the number of interfaces passed by the beam plus one, thus giving the actual number of edges present.

3,835,307
CREATIVE OPTICAL ARTISTIC MEDIUM
Leland P. Johnston, 513 South Lafayette St., Macomb, Ill. 61455
Filed Apr. 19, 1971, Ser. No. 134,955
Int. Cl. F21
U.S. Cl. 240—1 **3 Claims**



A structure providing a creative medium includes a light source directing white, colored, or variegated light through a layer of sand or comparable material supported under a light-transmissive panel. The light source and panel are supported upon a framework which also acts as container for the layer of sand. The artist inscribes lines and/or areas in the material, or otherwise redistributes it in patterns which form creative displays by virtue of the way light is passed through the material from the light source therebelow.

3,835,308
INFLATABLE ORNAMENTAL DEVICE
Harvey Reese, Melrose Park, Pa., assignor to Reese-Stein & Co., Inc., Cornwells Heights, Pa.
Filed Dec. 9, 1971, Ser. No. 206,409
Int. Cl. A47g 33/00
U.S. Cl. 240—10 C **8 Claims**



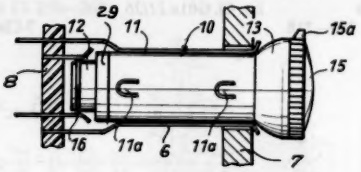
An envelope which simulates a figure when inflated has a transparent bottom wall and is connected to an upstanding base adjacent the bottom wall. A lamp within the base projects light upwardly through the base, through the bottom wall, and into the figure. The base is collapsible.

3,835,309

ELECTRICAL APPLIANCE POWERED BY SELF-CONTAINED RECHARGEABLE BATTERY

Waldemar Witte, and Alois Langer, both of Murrhardt, Germany, assignors to Waldemar Witte, Murrhardt, Panoramaweg, Germany

Filed Nov. 15, 1972, Ser. No. 306,548
Claims priority, application Germany, Nov. 30, 1971, 2159202
Int. Cl. F21l 9/00
U.S. Cl. 240—10.6 CH 3 Claims



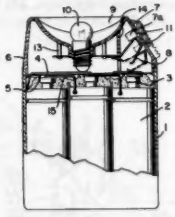
Electrical appliance such as a pocket flashlight and the like powered by a self-contained rechargeable battery. The appliance is provided with means whereby the batteries thereof may be recharged by inserting an electrical plug on the appliance into the cigarette lighter receptacle of a motor vehicle. A device is also provided whereby the batteries of the appliance may be recharged from the electrical mains of a house. A flashlight made in accordance with the invention may have the lens thereof pivotally mounted so that when the lens is swung away from its operative, light-focusing position on the flashlight, it serves as a magnifying glass to facilitate the examination of a map or the like illuminated by the flashlight.

3,835,310

FLASHLIGHT

Robert Koder, Ellwangen, Germany, assignor to Varta Aktiengesellschaft, Frankfurt/Main, Germany

Filed Sept. 13, 1972, Ser. No. 288,616
Claims priority, application Germany, Jan. 11, 1972, 2206544
Int. Cl. F21l 7/00
U.S. Cl. 240—10.65 17 Claims



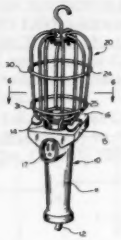
Flashlight having an internal connector strip fixedly connected at one end to the flashlight lamp, and deflectable at the other end to make or break contact with a battery terminal. Contains provisions for maintaining accurate alignment between the deflector connector strip end and the battery terminal. The strip itself is so curved as to ensure reliable area contact with the battery terminal when deflected into its contact-making position.

3,835,311

HAND LAMP WITH PIVOTABLE WIRE CAGE SECTION

David E. Kramer, Northbrook, Ill., assignor to Daniel Woodhead, Inc., Northbrook, Ill.

Filed May 25, 1973, Ser. No. 364,125
Int. Cl. F21v 15/02
U.S. Cl. 240—54 R 5 Claims



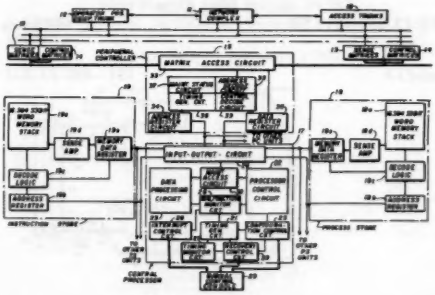
A portable hand lamp having a bulb-protecting cage with a pivotable wire cage section, and releasable locking means on the handle coacting with the lower ends of vertical wires of the pivotable section embodying diagonal edges releasably holding a pair of wires and a bar and lip combination coacting to keep the front section in closed position.

3,835,312

RECOVERY CONTROL CIRCUIT FOR CENTRAL PROCESSOR OF DIGITAL COMMUNICATION SYSTEM

John A. Wilber, Elk Grove Village; Verner K. Rice, Wheaton, and Rolfe E. Buhrke, La Grange Park, all of Ill., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Mar. 15, 1973, Ser. No. 341,427
Int. Cl. G06f 11/00, 15/00
U.S. Cl. 340—172.5 16 Claims



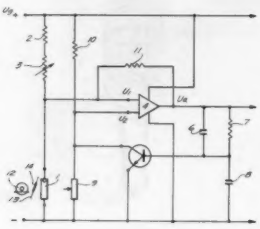
The central data processor of a digital communication system includes a recovery control circuit which is responsive to error levels in the central processor and initiates an internal timing cycle to generate signals used to initiate system recovery action.

3,835,313

ARRANGEMENT FOR COMPENSATING FOR CHANGES IN THE OPERATING CHARACTERISTICS OF A MEASURING ELEMENT

Guenther Stiefelmeyer, Vordere str. 99, Bissingen, and Guenther Schumm, Bruhlstr. 11/1, Beuren, both of Germany

Filed Apr. 10, 1973, Ser. No. 349,785
Int. Cl. H01j *39/12*
U.S. Cl. 250—206 **5 Claims**



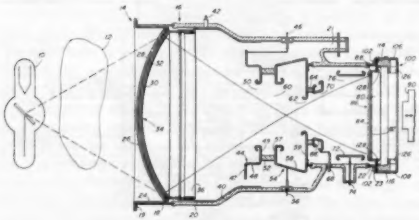
A photoresistor forms part of a voltage divider whose tap is connected to the inverting input of a differential amplifier. A second voltage divider has a tap connected to the direct input of the differential amplifier. The differential amplifier output is connected to a capacitor through a parallel resistor-capacitor network. The voltage across the capacitor consitutes the emitter-base voltage of a transistor whose emitter-collector circuit is connected in parallel with one resistor of the second voltage divider. Changes in the operating characteristic of the measuring element cause a change in the voltage across the capacitor which in turn causes a change in the resistance of the emitter-collector circuit of the transistor in such a direction that the output voltage of the differential amplifier is independent of the changes of the operating characteristics of the measuring element.

3,835,314

INTENSIFIER RADIOGRAPHIC IMAGING SYSTEM

Stanley S. Grossel, New York, N.Y.; Andrew L. Cunningham, Springfield, and H. Sherwood Cooke, Stamford, both of Conn., assignors to The Machlett Laboratories, Incorporated, Springdale, Conn.

Filed Mar. 5, 1973, Ser. No. 337,817
Int. Cl. H01j *31/50*
U.S. Cl. 250—213 VT **15 Claims**



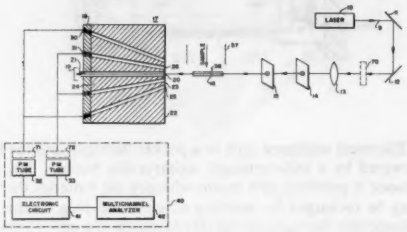
An intensified radiographic imaging system comprised of an image intensifier tube including an input screen assembly having means for converting an incident X-ray image into an electron image, an output screen having means for converting the electron image into a visible light image, and an adjacent output faceplate transparent to visible light; a photographic film; means for pressing a portion of the film against the exterior surface of the output faceplate when desired; and means for focusing the entire electron image onto a minified area of the imaging screen and alternatively onto an area of the imaging screen proportionate in size to said portion of the film.

3,835,315

SYSTEM FOR DETERMINING PARAMETERS OF A PARTICLE BY RADIANT ENERGY SCATTERING TECHNIQUES

Claude C. Gravitt, Jr., Rockville, Md., assignor to The United States of America as represented by the Secretary of Commerce, Washington, D.C.

Filed Dec. 6, 1972, Ser. No. 312,529
Int. Cl. G01n *21/26*
U.S. Cl. 250—218 **7 Claims**



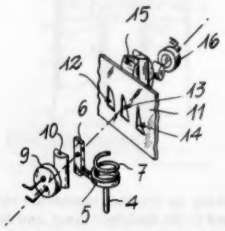
A collector contains a hole and annular apertures for transmitting a pair of conical, coaxial sheets of radiant energy. A beam of energy is directed through the hole, whereby a scattering volume is defined by the beam diameter and the fields of view of the apertures. When a particle moves through the volume, enery is scattered through the apertures and is detected to generate a pair of signals, each having a magnitude dependent upon the intensity of the energy in one of the conical sheets. A device responds to the magnitudes of the signals to indicate the size or nonspherical characteristics of the particle.

3,835,316

DEVICE FOR ELECTRONICALLY DETECTING PRESSURE CHANGES IN A FLUID

Maurizio Checchetti, Piazza Sicilia, 6, Milan, Italy 20146

Filed Sept. 13, 1973, Ser. No. 396,747
Claims priority, application Italy, Sept. 25, 1972, 29641/72
Int. Cl. G01d *5/34*
U.S. Cl. 250—231 P **4 Claims**



A device for electronically detecting pressure changes in a fluid is disclosed. The device comprises a movable plunger fast with a perforated movable diaphragm, on one side having a

light source and on the other side a stationary screen with at least one shaped aperture beyond which a photoresistor is arranged and connected to an electric circuit for transforming the optical signal into an electric signal.

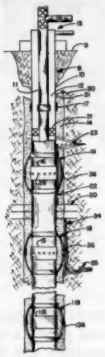
3,835,317
MARKER FOR CEMENTED CASING

Roy R. Vann, Box 40-A Star Route West, Artisia, N. Mex. 88210

Continuation-in-part of Ser. No. 109,381, Jan. 25, 1971, Pat. No. 3,710,114. This application Dec. 22, 1972, Ser. No. 317,648

Int. Cl. G21h *5/02*

U.S. Cl. 250—260 **6 Claims**



Method of determining the location in a well bore of the top of a cement plug by adding an isotope having a known half-life to the cement slurry as the cement is initially pumped into the borehole annulus. The isotope is subsequently located by measuring the radio activity of the borehole with radiation measuring apparatus of the prior art.

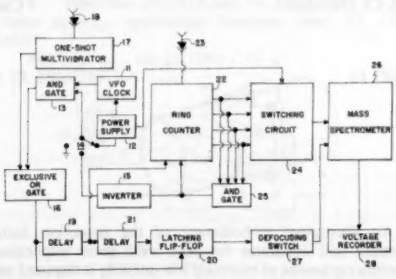
3,835,318
FAST SCAN CONTROL FOR DEFLECTION TYPE MASS SPECTROMETERS

James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an invention by; Paul R. Yeager, Box 901; Gianni Gaetano, Railway Rd., both of Grafton, Va. 23490, and David B. Hughes, 34 Langhorne Circle, Newport News, Va. 23606

Continuation of Ser. No. 188,836, Oct. 31, 1971, abandoned. This application May 4, 1973, Ser. No. 357,126

Int. Cl. H01j *39/34*

U.S. Cl. 250—281 **6 Claims**



A high-speed scan device that allows most any scanning sector mass spectrometer to measure preselected gases at a very high sampling rate. The device generates a rapidly changing staircase output which is applied to the accelerator of the spectrometer and it also generates defocusing pulses that are applied to one of the deflecting plates of the spectrometer which when shorted to ground deflects the ion beam away from the collector. A defocusing pulse occurs each time there is a change in the staircase output.

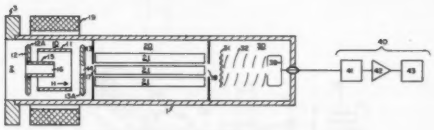
3,835,319
COLD CATHODE ION SOURCE MASS SPECTROMETER WITH STRAIGHT LINE ARRANGEMENT OF ION SOURCE AND ANALYZER

Jonathan R. Roehrig, and Franklin L. Torney, both of South Weymouth, Mass., assignors to National Research Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 811,139, March 27, 1969, abandoned. This application May 14, 1971, Ser. No. 143,327

Int. Cl. H01j *39/34*

U.S. Cl. 250—290 **9 Claims**



Mass spectrometer combination and ion source subcombination therefor. The mass spectrometer has a magnetron ion source, a quadrupole ion analyzer and an ion collector with digital counting read-out and this is useful for residual gas analysis, partial pressure analysis and chemical composition determination and is particularly suited for ultra-high vacuum usage yielding high sensitivity and improved signal-to-noise ratio, consistent with low weight and bulk. The ion source is constructed so that photons are not produced at those loci which can be viewed through the ion exit aperture thereof. Thus, the spectrometer collector is free from impingement thereon of light energy and the signal-to-noise ratio of the instrument is improved thereby.

3,835,320
PARTICLE-BEAM DEVICE EQUIPPED WITH MEANS FOR ATTENUATING MECHANICAL MOVEMENTS

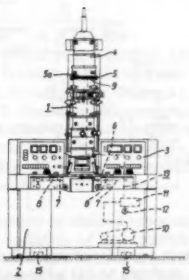
Hans Helwig, Berlin, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Munich, Germany

Filed May 21, 1970, Ser. No. 39,388

Claims priority, application Germany, May 28, 1969, 1927410

Int. Cl. H01j *37/26;* **G01n** *23/00*

U.S. Cl. 250—311 **6 Claims**



A particle-beam device has a beam axis and is exposed to mechanical movements. The device also has a column as-

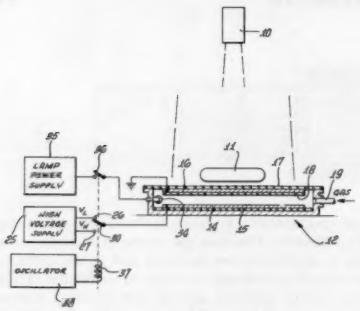
sembly for housing electro-optical equipment needed for focus the particle beam and a support structure for supporting the column assembly. A damping system for damping the mechanical movements has a plurality of elastic pressure vessels communicating with the support structure and the column for holding the column. The damping system includes fluid actuating means connected to the pressure vessels for actuating the pressure vessels in response to the mechanical movements.

3,835,321

METHOD AND APPARATUS FOR ACHIEVING GAIN IN ELECTRON RADIOGRAPHY IMAGING CHAMBER

Andrew P. Proudian, Chatsworth, Calif., assignor to Xonics, Inc., Van Nuys, Calif.

Filed Sept. 28, 1973, Ser. No. 401,894
Int. Cl. G03b *41/16*
U.S. Cl. 250—315 A **10 Claims**



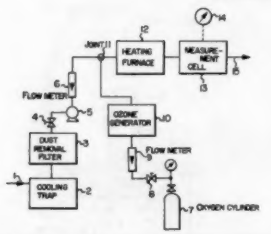
An electron radiography system with improved resolution and high gain. An electron radiography system with a few percent of an electronegative gas added to the imaging gas and operable for short intervals in the avalanche, high gain condition. Arrangements for obtaining periodic high gain operation including gap voltage increases and gap radiation.

3,835,322

METHOD AND APPARATUS FOR ANALYZING NITROGEN OXIDES IN GAS

Isamu Komatsu, Takahagi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 2, 1973, Ser. No. 329,119
Claims priority, application Japan, Feb. 4, 1972, 47-12215
Int. Cl. G01n *21/00*
U.S. Cl. 250—343 **29 Claims**



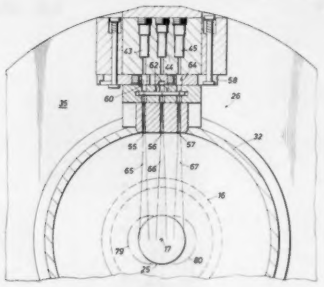
Nitrogen oxides in a gas, for example, flue gas from a boiler, are continuously analyzed by (*a*) adding ozone gas to the gas containing nitrogen oxides thereby converting the nitrogen oxides to dinitrogen pentaoxide, (*b*) thermally decomposing the dinitrogen pentaoxide in the gas to nitrogen dioxide at a temperature of 300° to 340°C, and (*c*) continuously measuring nitrogen dioxide content of gas by an optical analyzer, for example, dual wavelength, photoelectric type analyzer of ultraviolet and visible regions.

3,835,323

RADIATION INSPECTION APPARATUS WITH ADJUSTABLE SHUTTER FOR INSPECTING DIFFERENT SIZES OF TUBULAR GOODS

John E. Kahil, 9607 Windswept, Houston, Tex. 77042

Filed Aug. 7, 1972, Ser. No. 278,311
Int. Cl. G01t *1/18*
U.S. Cl. 250—360 **22 Claims**



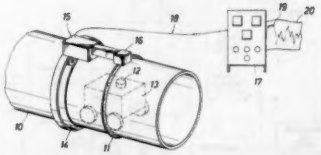
In the new and improved radiation apparatus disclosed herein for inspecting tubular goods, a radiation detector is arranged on a selected inspection axis for receiving radiation from a uniquely-arranged radiation emitter facing the detector and rotating about the exterior of the tubular member as it is translated along the axis around the detector. In the preferred embodiment disclosed herein, this unique radiation emitter includes an array of side-by-side radioactive sources aligned with laterally-spaced focussing passages for producing a composite radiation pattern formed by a number of individual sharply-defined radiation patterns on opposite sides of the inspection axis as well as intersecting the axis. The emitter further includes a selectively-positionable radiation controller which is arranged for movement between one position for emitting only a single radiation beam of selected intensity to produce a radiation pattern of reduced size and another position for emitting radiation beams from all of the sources to produce the composite pattern across the inspection axis.

3,835,324

PIPE WELD INSPECTION METHOD AND APPARATUS

Orville C. Weigle, 6617 Ariel St., Houston, Tex. 77036

Filed Oct. 4, 1972, Ser. No. 294,943
Int. Cl. G01t *1/10*
U.S. Cl. 250—360 **7 Claims**



An illustrative embodiment of the invention includes method and apparatus for pipe weld seam inspection. A gamma ray source of relatively low intensity is disposed on the interior portion near the center of a pipe section being inspected. A gamma ray detector comprising an activated scintillating crystal and a photomultiplier tube is traversed in a

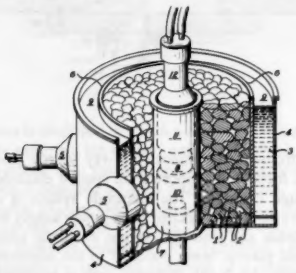
track on an elastomeric belt about the circumference of the pipe and maintained adjacent said weld seam at all circumferential points. The intensity of the gamma radiation penetrating the weld seam is sensed and recorded as a function of the circumferential location of the detectors. This recording may then be interpreted in terms of the material density of the weld at all circumferential points on the seam.

3,835,325

RADIATION DETECTORS USING MULTIPLE SCINTILLATION CRYSTAL PIECES

Gerald J. Fishman, Huntsville, Ala., assignor to Brown Engineering Company, Inc., Huntsville, Ala.

Filed Aug. 18, 1972, Ser. No. 281,699
Int. Cl. G01t *1/20*
U.S. Cl. 250—366 **22 Claims**



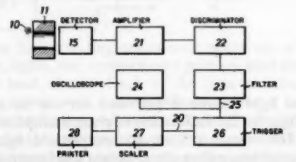
An apparatus for the detection of invisible radiation utilizing a unique geometry which results in an improve efficiency. A plurality of inorganic halide crystals are contained in a region of an enclosure, upon one surface of which is disposed a plurality of photomultiplier tubes. An optical coupling medium is diposed between a boundary of the crystals and the photomultiplier tubes, the medium being of a certain minimum dimension to ensure that light emitted from the crystals is incident at the photomultiplier tubes. In one embodiment, the enclsoure is cylindrical and a sample area is centrally located within the enclosure. In another embodiment the enclsoure is a parallelepiped with a large sample area located below the enclosure and the photomultiplier tubes located on the upper surface of the enclosure.

3,835,326

METHOD OF DETERMINING THE SPEED OF ROTATING BODIES

Andreas Gerve, Linkenheim; Gunder Essig, Karlsruhe, and Bernhard Herkert, Neureut, all of Germany, assignors to Gesellschaft fur Kernforschung mbH, Karlsruhe, Germany

Filed Mar. 27, 1973, Ser. No. 345,460
Claims priority, application Germany, Mar. 27, 1972, 2214859
Int. Cl. G01t *1/16*
U.S. Cl. 250—393 **11 Claims**



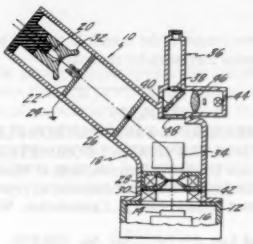
The rotational speed of a rotating body is determined by providing an activated point on one end surface of the body so that it emits radiation. A shield for the radiation is placed adjacent this axial surface of the body in such a position that it covers only a portion of the axial surface. A detector is aligned with the uncovered portion of the body for detecting the radiation emitted by the activated point on the body and the detector registers the emitted radiation as sequences of pulses. By determining the time between successive sequences of pulses, the speed or the rotating body can be determined.

3,835,327

TRIODE ELECTRON GUN FOR ELECTRON BEAM MACHINES

Glen S. Lawrence, Windsorville, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Continuation of Ser. No. 250,910, May 8, 1972, abandoned.
This application Nov. 29, 1973, Ser. No. 420,240
Int. Cl. H01j *37/00*; G01n *23/00*
U.S. Cl. 250—398 **8 Claims**



A high power electron beam machine for operating on a workpiece is disclosed in which the beam focus is automatically maintained constant without the necessity of lens current variation regardless of changes in beam current. The electron gun assembly for the machine consists of a Rogowski gun having a square ribbon filament recessed from an enlarged filament aperture, and a pin type anode with a reduced height and an increased gap from the bias electrode. The electron gun produces a stationary image or apparent source of electrons even though the beam current or the high voltage operating level of the electron gun is varied. Increased life of the ribbon filament is obtained by using a ribbon filament consistng of tungsten with 3 percent rhenium added thereto.

3,835,328

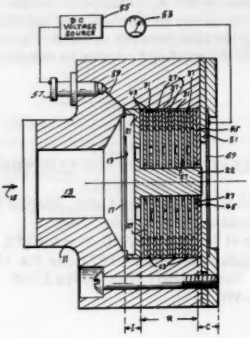
IONIZATION SYSTEM FOR SENSING AND MEASURING GASEOUS IMPURITIES

William A. Harris, New Brighton; Bernard C. Schluter, Forest Lake, and Erik T. Tromborg, Bloomington, all of Minn., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 12, 1972, Ser. No. 252,695
Int. Cl. G01n *23/12*
U.S. Cl. 250—432 **3 Claims**

An ionization detector in which a vapor sample flows past a source of ionizing radiation of beta particles and through a recombination region which forces the sample to pass through a tortuous path created by a series of parallel adjacent and spaced insulated washers mounted about a shaft with the washers having different selected openings. The sample first passes through a metallic manifold also having openings and

then through the washers followed by the ion collection region which includes a screen of electrically conducting material. A



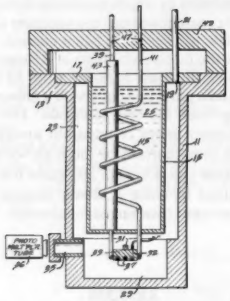
DC voltage source connects the manifold and the screen with an ammeter in series therewith for readout.

3,835,329

METHOD OF MEASURING FAST NEUTRON FLUX USING THERMOLUMINESCENT DOSIMETER

Paul R. Moran, and David W. Pearson, both of Madison, Wis., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Aug. 23, 1973, Ser. No. 390,970
Int. Cl. G01t 1/11
U.S. Cl. 250—484 **10 Claims**



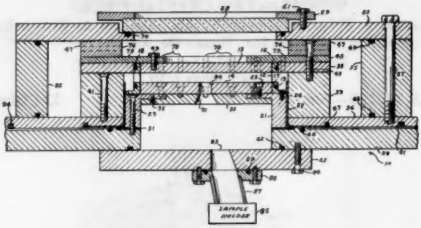
Thermoluminescent phosphors which are susceptible to neutron activation are exposed to a mixed field of radiation. Thermoluminescence resulting from prompt gamma irradiation is removed by a short period of annealing at a high temperature. The phosphors are then stored in a shielded chamber maintained at a sufficiently low temperature to allow accumulation of radiation dose produced by radionuclides formed on neutron activation. The thermoluminescence attributable to this self-irradiation dose is read and correlated to neutron flux or dose. Through use of separate phosphor materials having different threshold energies for neutron activation, energy spectra of fast neutron flux is obtained.

3,835,330

ELECTROMAGNETIC IMPLOSION X-RAY SOURCE

William L. Baker, Columbus, Ohio, and Peter John Turchi, New York, N.Y., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Sept. 15, 1972, Ser. No. 289,693
Int. Cl. H01j 35/00
U.S. Cl. 250—493 **3 Claims**



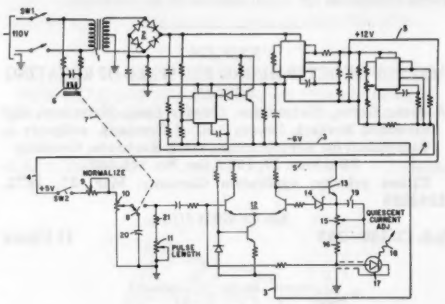
An electromagnetic implosion X-ray source having a thin cylindrical metal foil supported on spaced electrodes within an evacuated chamber. The electrode system is connected through a switch to a capacitor bank power supply with low inductance leads and with the average electrical impedance of the dynamic plasma being matched to the impedance of the power supply. An X-ray radiation path is provided between the X-ray source and a sample holder attached to the X-ray source.

3,835,331

STABLE PULSED LIGHT SOURCE

John H. Thorngate, and Phillip T. Perdue, both of Oak Ridge, Tenn., assignors to The United States of America as represented by the Secretary of United States Atomic Energy Commission, Washington, D.C.

Filed Sept. 26, 1973, Ser. No. 401,091
Int. Cl. H01j 39/12
U.S. Cl. 250—552 **4 Claims**



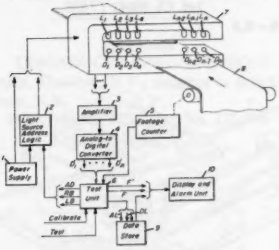
A pulsed light source is provided for use as a standard source of light for the calibration of photomultiplier tubes and the like. The source utilizes an inexpensive light-emitting diode and produces pulses whose height and length may be adjusted. Temperature stabilization is employed and the diode is operated in the current mode. Typical resolution and stability are 3 and 0.5 percent, respectively.

3,835,332

INSPECTION APPARATUS FOR DETECTING DEFECTS IN A WEB

Robert E. Bridges, Pittsford, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed June 4, 1973, Ser. No. 366,818
Int. Cl. G01n 21/32
U.S. Cl. 250—563 16 Claims



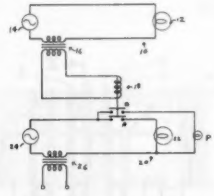
Apparatus is disclosed in which a moving web is scanned by repetitively pulsing a set of light emitting diodes in sequence and the resulting light passing through, or reflected from, the moving web is detected by a set of photosensors. The output signal of each photosensor is converted into a digital code, representing the intensity of the detected light. During a calibration mode of operation, the apparatus converts the codes generated by repeated scanning of a defect-free web into data representing the normal ranges of variation in the amplitude and in the scan-to-scan difference in amplitude of signals generated by each photosensor. After calibration of the apparatus is completed, scanning of the web to be inspected begins and the digital codes generated are applied to the calibrated apparatus, which compares them with the data representing the normal ranges of variation in the photosensor output signal characteristics to determine if defects are present in the web.

3,835,333

REDUNDANT ELECTRICAL SYSTEM

Markandan Hari Balan, 3363 Sedgwick Ave., Bronx, N.Y. 10463

Filed Mar. 19, 1973, Ser. No. 342,847
Int. Cl. H02j 9/00
U.S. Cl. 307—64 4 Claims



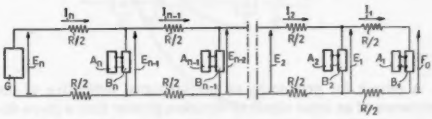
A system for providing continuous operation of electrical appliances, lights, etc. comprising a primary load circuit and a secondary load circuit. Each of the load circuits having a source of power and a load. Monitor means is arranged between the primary and secondary load circuits which is responsive to the passage of current in the primary circuit to maintain the secondary circuit inoperative, and responsive to the cessation of current in the primary circuit to render said secondary circuit operative. Preferably the monitor means comprises a transformer and a solenoid relay.

3,835,334

REMOTE POWER SUPPLY FOR REPEATERS

Jean-Luc Notteau, Paris, France, assignor to Telecommunications Radioelectrigues Et Telephoniques T.R.T., Paris, France

Filed Apr. 13, 1972, Ser. No. 243,594
Claims priority, application France, Apr. 15, 1971, 71.13280
Int. Cl. H02j 1/10
U.S. Cl. 307—69 4 Claims



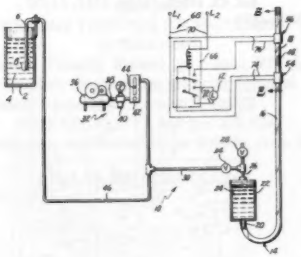
A remote power supply system for transmission line repeaters where the local power supply unit of the respective repeaters are all connected in parallel with the remote power supply line. Each of these local power supply units comprises a d-c to d-c converter that automatically controls the voltage applied so that a constant lower supply voltage that is equal for all the repeaters is supplied to each repeater.

3,835,335

LIQUID LEVEL RESPONSIVE CONTROL SYSTEM

John Robischon, 430 Warrior St., S.E., Olympia, Wash. 98503

Filed Aug. 13, 1973, Ser. No. 387,931
Int. Cl. G01f 23/12
U.S. Cl. 307—116 6 Claims

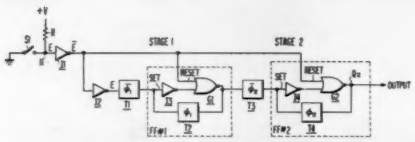


A U-tube is connected to a pressure vessel, the vessel and the U-tube containing an operating liquid, and the vessel also being connected to conduit means leading from a source of gas pressure. A bubbler tube is disposed in a container holding the controlling liquid, and is connected to the conduit means. The U-tube includes a sight glass portion having disposed therein a float containing magnetic means, which float rises and falls in response to the level of the controlling liquid in the container. Spaced, magnetically responsive switches are mounted on the U-tube to be operated by the float, the switches being connected into a circuit for operating equipment controlled by the system.

3,835,336
PULSE WIDTH SENSING CIRCUIT

Dennis Howard Block, Hightstown, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 23, 1973, Ser. No. 344,299
Int. Cl. H03k 5/20
U.S. Cl. 307—234 10 Claims

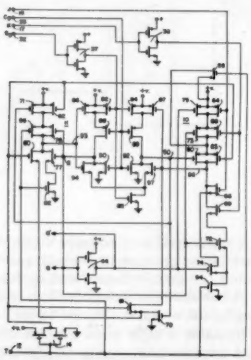


A circuit for producing an output signal indicative of the presence of an input signal of duration greater than a given duration, T. The circuit includes a first stage which in response to a sampling pulse and the presence of an input signal of first value, stores a signal of first binary significance. The circuit also includes a second stage which in response to a shift pulse occurring a time T after the sampling pulse produces at its output, which is the circuit output, a signal corresponding to the one stored in said first stage. Each stage includes means responsive to the input signal for resetting the output of each stage to a level of second binary significance when the input signal has a second value. A signal of first value must, therefore, be present for a duration greater than T to produce an output of first binary significance, where the duration must also include a sampling pulse followed by a shift pulse. The circuit also includes means for, selectively, directly passing the input signals from the input to the output of the circuit.

3,835,337
BINARY UNIVERSAL FLIP-FLOP EMPLOYING COMPLEMENTARY INSULATED GATE FIELD EFFECT TRANSISTORS

James W. Foltz, Scottsdale, Ariz., assignor to Motorola, Inc., Chicago, Ill.

Filed July 20, 1973, Ser. No. 381,056
Int. Cl. H03k 3/286, 3/33, 21/00
U.S. Cl. 307—279 11 Claims

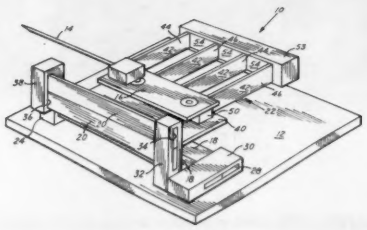


A universal J-K flip-flop is implemented with insulated gate field effect transistors of both P and N channel types. The transistors are interconnected as a plurality of AND gates and NOR gates, with some transistors serving a dual function in both the master and slave portions of the flip-flop. A provision for direct set and reset of the flip-flop also is included.

3,835,338
ELECTRICALLY CONTROLLED ULTRA-MICROMANIPULATOR

A. Robert Martin, 9172 E. Tufts Cir., Englewood, Colo. 80110

Filed Aug. 23, 1973, Ser. No. 390,846
Int. Cl. H04r 17/00
U.S. Cl. 310—8.6 12 Claims

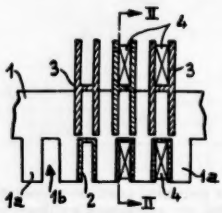


An electrically controlled ultra-micromanipulator utilizes three sets of electrostrictive elements arranged in mutually perpendicular relationship and interconnected to selectively move a probe or other object in a three-dimensional pattern. In the disclosed embodiment, two sets of the electrostrictive elements establish pivotal movement about mutually perpendicular axes and the third set of electrostrictive elements establish linear movement in a direction perpendicular to the pivotal axes of the other two sets of elements. The elements establishing the linear movement are arranged in pairs adapted to flex in opposite directions upon an applied potential so that the probe or other object moves along a linear path.

3,835,339
IMPROVEMENT RELATIVE TO LINEAR INDUCTION MOTORS AND COOLING DEVICES APPLIED TO THE SAME

Joseph Laronze, Tassin La Demi-Lune, France, assignor to Compagnie Electro-Mecanique, Paris, France

Filed May 9, 1973, Ser. No. 358,511
Claims priority, application France, Dec. 8, 1972, 72.44437
Int. Cl. H02k 41/02
U.S. Cl. 310—13 9 Claims



A linear induction motor comprises armature and inductor components one of which is mounted for movement along a rectilinear path relative to the other. The inductor component includes a rectangular laminated body made from sheets of magnetic material and which provides a row of spaced teeth confronting the armature member, longitudinally spaced ener-

gizable coil means surround the body of the inductor between the teeth and longitudinally spaced heat-radiating units made from a material, which has good heat-conductivity characteristic, and is also amagnetic, surround the inductor body on all sides except the toothed side. These heat radiating units are provided with vaned surfaces to collect part of the heat given off by the coils and other vaned surfaces for dissipating the heat thus collected to the ambient air. If the heat-radiating unit is made from a material which is also electrically conductive, it effects a reduction in leakage flux.

3,835,340

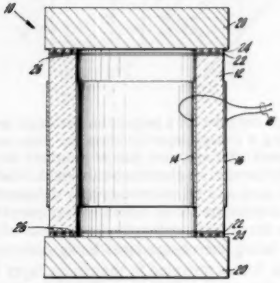
TRANSDUCER CORONA SHIELD

Sid Schildkraut, Flushing, N.Y., assignor to Edo Corporation, College Point, N.Y.

Filed Feb. 15, 1973, Ser. No. 332,716

Int. Cl. H04r *17/00*

U.S. Cl. 310—9.8 **5 Claims**



In an electroacoustic transducer, corona in the interface between the ceramic transducer element and the electrically conductive transducer end mass, supporting structure, or the like, is substantially eliminated by means of a corona shield electrode on the ceramic element in the interface and electrically connected to the end mass or other conductive structure.

3,835,341

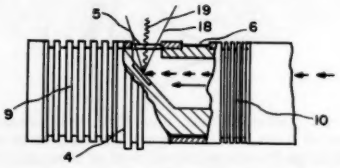
SELECTABLE MULTI-WINDOW X-RAY TUBE

William P. Zingaro, 22 Clubway, Hartsdale, N.Y. 10530

Filed June 25, 1973, Ser. No. 373,286

Int. Cl. H01j *35/18*

U.S. Cl. 313—59 **7 Claims**



An x-ray tube provides with a plurality of windows mounted in a slide which is hermetically sealed on the exterior of the tube envelope. Movement of the slide which is effected by a bellow at each end of the slide places a window of given thickness and material in the path of x-rays generated within the tube permitting x-rays of different wave-lengths and intensities generated within the tube to be most efficiently and selectively transmitted. The windows may be of different thicknesses and of the same or different material.

3,835,342

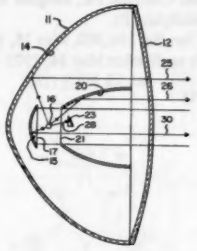
RADIANT ENERGY COLLECTOR OR REFLECTOR

Miller L. Freeman, Burbank, Calif., assignor to John W. Ervin, Beverly Hills, Calif., a part interest

Filed May 21, 1973, Ser. No. 361,955

Int. Cl. H01k *1/32*

U.S. Cl. 313—114 **9 Claims**



A light projector particularly suitable for automobile headlights which will direct a plurality of concentric light beams of different intensities substantially without energy loss. The light projector is provided with a stepped rear reflector of parabolic shape or partially or entirely of the shape of an anamorphosscope. It also is provided with a first front reflector of parabolic shape and a second front reflector disposed inside of the first front reflector of substantially spherical shape. The first front reflector may also be partially or entirely of the shape of an anamorphoscope corresponding to that of the rear reflector. The second front reflector substantially obscures the light source from an observer above a predetermined plane such as a horizontal plane. This will minimize the danger of glare to an approaching driver. On the other hand it will direct substantially all of the light onto the road and permit the beam to reach farther out with the same amount of candle power. The projector may also be used to direct any radiant energy such as electromagnetic waves or sound waves. Additionally it may be used not only to reflect or project radiant energy but also for collecting radiant energy into a focal point.

3,835,343

GAS-DISCHARGE TUBE FOR HIGH-CURRENT PULSED OPERATION

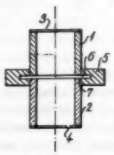
Andrew James Timothy Holmes, and John Ritchie Cozens, both of London, England, assignors to National Research Development Corporation, London, England

Filed Aug. 4, 1972, Ser. No. 278,024

Claims priority, application Great Britain, Aug. 13, 1971, 38100/71

Int. Cl. H01j *61/06, 61/30*

U.S. Cl. 313—217 **5 Claims**



A gas-discharge tube capable of sustaining a cold-cathode arc enables the switching of high-current pulses with a duration of one microsecond at a rate in excess of 100 KH. The operative surface of the cathode bounds at least one cavity in the cathode such that for a majority of points on the surface

the outward normal to the surface intersects the surface at a distance not exceeding 5 millimeters and preferably not exceeding 2 millimeters. The cathode surface may be the surface of an annular slit and the cathode material may be copper.

3,835,344

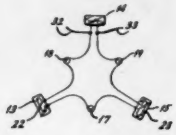
APPARATUS FOR SUPPORTING CATHODE HEATERS

Thomas E. Chesla, Chalfont, Pa., assignor to Philco-Ford Corporation, Philadelphia, Pa.

Division of Ser. No. 256,980, May 25, 1972, Pat. No. 3,802,855. This application May 14, 1973, Ser. No. 360,152

Int. Cl. H01j *1/92*

U.S. Cl. 313—273 **1 Claim**



A heater support ring for use in the multicathode gun of a cathode ray tube. The support ring is made from a single piece of conductive wire which is preformed into a generally triangular shape the apex portions of which are glassed into gun assembly rods. Three cuts are then made in the wire and free ends adjoining the cuts are bent into position to accept the connections of the filamentary heaters. The support ring structure is unusually short, in the direction of the axial length of the cathode ray tube gun, and few welds are required.

3,835,345

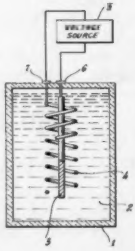
ELECTROLUMINESCENT SOLUTIONS

Kenneth W. French, Mineola; Paul O. Haugsjaa, Plainview, both of N.Y., and Adam Heller, Sharon, Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Sept. 27, 1971, Ser. No. 184,142

Int. Cl. H01j ; H01k

U.S. Cl. 313—358 **9 Claims**



Electroluminescent emission is produced in an active medium comprising a compound containing at least one active ion selected from the group of ions consisting of ions of cerium, praseodymium, neodymium, samarium, europium, gadolinium, dysprosium, terbium, thulium, and ytterbium. The active ion is dissolved in a solvent from which it can be electrodeposited. The preferred solvents are either a Lewis Acid in phosphorus oxychloride, dimethyl sulfoxide, or propylene carbonate. When the active medium is placed in contact with a pair of electrodes and a voltage of sufficient magnitude is applied across the electrodes, electroluminescent emission is observed.

3,835,346

CATHODE RAY TUBE

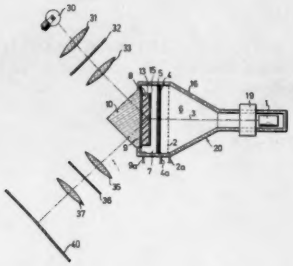
Fred Mast, Zuzwil, and Ulrich La Roche, Zurich, both of Switzerland, assignors to Eidophor AG, Glarus, Switzerland

Filed Oct. 17, 1972, Ser. No. 298,233

Claims priority, application Switzerland, Oct. 27, 1971, 15685/71

Int. Cl. H01j *29/12*

U.S. Cl. 313—91 **6 Claims**



A cathode ray tube for a projection television system is provided having a charge layer dividing the tube envelope into two chambers. An electron gun is mounted in one of the chambers to provide an electron beam which is deflected over the charge layer and an electrostatically deformable modulation layer supported on an optically transparent support is provided in the other chamber, the free surface of the modulation layer facing the charge layer being deformable by the electrostatic forces provided in the charge layer by scanning thereof by the electron beam. An alternative form of tube is also provided in which the charge layer rests on the deformable modulation layer which is supported on an optically transparent surface of the envelope so that the modulation layer is totally enclosed and isolated from the rest of the tube envelope, the charge layer forming a vacuum tight partition.

3,835,347

COLOUR PICTURE TUBE WITH IMPROVED COLOR PURITY

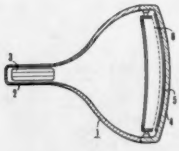
Hiromi Kanai, Mobara City, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed July 21, 1972, Ser. No. 273,822

Claims priority, application Japan, Aug. 11, 1971, 46-60312

Int. Cl. H01j *29/32*

U.S. Cl. 313—92 R **2 Claims**



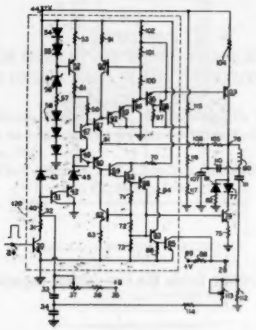
In a colour picture tube of the type comprising an evacuated envelope and a fluorescent screen including a plurality of phosphor units and a coating of a black non-luminous substance applied onto the areas between the phosphor units, the phosphor units are provided over substantially the entire surface of the fluorescent screen at a substantially equal pitch, and each of the phosphor units has an area larger than the cross-sectional area of an electron beam impinging upon the fluorescent screen, and the area of the phosphor units at the peripheral portion is larger than or substantially equal to that of the units at the central portion.

3,835,348

TELEVISION RECEIVER DEFLECTION CIRCUITRY

Dong Woo Rhee, Williamsville, N.Y., assignor to GTE Sylvania Incorporated, Stamford, Conn.

Filed Dec. 29, 1972, Ser. No. 319,512
Int. Cl. H01j 29/70
U.S. Cl. 315—27 TD 16 Claims



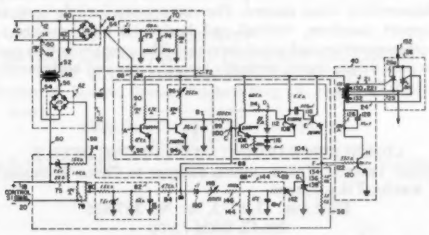
A deflection circuit adapted for monolithic integrated circuit construction with external power output transistors is shown. The circuit includes circuitry for matching the characteristics of the integrated circuit to the output transistors and circuitry for minimizing power consumption as well as circuitry for improving the transient response.

3,835,349

SOLID STATE ELECTRONIC STAGE LIGHTING CONTROL CIRCUIT

Leroy D. Yancey, 1834 S. Oakmont Dr., Bountiful, Utah

Filed Aug. 6, 1973, Ser. No. 386,039
Int. Cl. H05b 39/04
U.S. Cl. 315—194 12 Claims



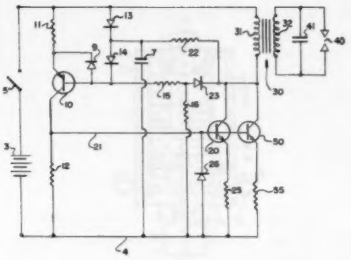
An electronic control circuit for controlling the luminescence of incandescent lamps used in theaters for stage lighting is constructed by interconnecting control signal input means, a solid state triggering circuit and output means to a controllable main power supply apparatus such as a silicon-controlled rectifier device (SCR). The control circuit also includes power supply means to provide direct current operating pulses and bias voltages to circuit components, and a feedback circuit to provide for stable and automatic operation. The electronic control circuit provides a square law relationship between a linear scaled indicia of adjustment means of an external signal source, which supplies an input control signal to the circuit, and the luminescence of the incandescent lamps.

3,835,350

HIGH ENERGY OUTPUT INDUCTIVE IGNITION SYSTEM

Kaushik H. Thakore, Sidney, N.Y., assignor to The Bendix Corporation, Southfield, Mich.

Filed Nov. 29, 1972, Ser. No. 310,281
Int. Cl. H05b 37/02, 39/04
U.S. Cl. 315—209 T 2 Claims



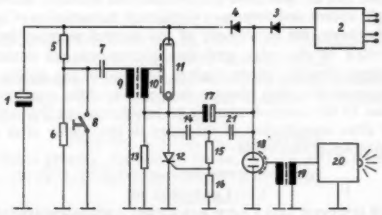
An improved ignition system for a gas turbine engine that has a high energy output capability at low input voltage at reasonable cost because of parallel arranged transistors having matched current transfer ratios (Beta).

3,835,351

PHOTOGRAPHIC FLASH APPARATUS

Arthur Schneider, Volkenrode, Germany, assignor to Rollei-Werke Franke & Heidecke, Braunschweig, Germany

Filed Nov. 17, 1972, Ser. No. 307,605
Claims priority, application Germany, Nov. 25, 1971, 2158361; Germany, Nov. 25, 1971, 2158362
Int. Cl. H05b 41/32
U.S. Cl. 315—241 P 1 Claim

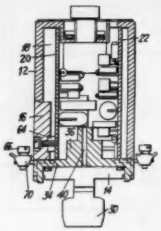


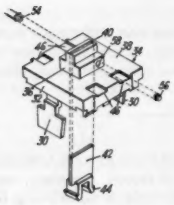
Photographic flash apparatus having a flash tube, a light integrator for measuring the quantity of light reflected from the subject being photographed, and an electronic switch operated by the integrator when the cumulative or integrated total of reflected light reaches a threshold value. A thyristor in the circuit of the flash tube becomes conductive when the flash tube is flashed, and is connected to the electronic switch operated by the integrator in such a way as to become non-conductive when the threshold value is reached, thereby terminating the flash in such a way as to conserve the remaining power or energy in the main capacitor which powers the flash tube, rather than dissipating the remaining energy by short circuiting it. The gate of the thyristor is activated to render the thyristor conductive, in response to and as a result of the firing of the flash tube, rather than from a separate source. When the electronic switch is operated to terminate the flash, a negative potential is temporarily applied to the gate of the thyristor, so as to shorten the turn-off time of the thyristor.

3,835,352
TIMING ATTACHMENT FOR A RELAY

Geoffrey Clarke, Blunsdon, Nr. Swindon, England, assignor to Square D Company, Park Ridge, Ill.

Filed Mar. 16, 1973, Ser. No. 342,327
Claims priority, application Great Britain, Mar. 21, 1972, 13107/72
Int. Cl. H01h 47/18, 47/24
U.S. Cl. 317—130 8 Claims





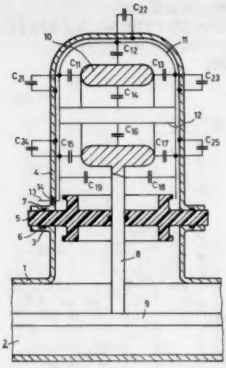
A timing attachment for a relay including a light source and detector and an apertured control member movable between the light source and detector to influence transmission of light therebetween, the movement of the control member being controlled by the relay, and the light source and detector providing initiation of the timing. Reversal of the timing attachment on the relay changes the position of the attachment relative to the control member to enable change from time delay after energization of the relay to time delay after de-energization or vice versa.

3,835,353
CAPACITIVE VOLTAGE-DIVIDING ARRANGEMENT FOR HIGH VOLTAGE MEASURING APPARATUS

Wolfgang Hermstein, and Eckart Maenicke, both of Berlin, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Mar. 15, 1973, Ser. No. 341,673
Claims priority, application Germany, Mar. 29, 1972, 2215928
Int. Cl. H01g 3/02
U.S. Cl. 317—244 23 Claims

In a capacitive voltage-dividing device of the type having a high-voltage capacitor connected in series with a low-voltage capacitor for high voltage measurements, particularly in connection with fully insulated, metal clad, high voltage switchgear, an improved arrangement comprises an inner electrode connected to the high voltage bus of the switchgear and extending through an opening in the metal cover; an intermediate or measuring electrode surrounding the inner electrode; and an outer electrode forming a cap-like extension of the metal cover and surrounding the measuring electrode in spaced, insulated relation. The measuring electrode in combination with the inner electrode forms the high voltage capacitor, and the measuring electrode in combination with



the outer electrode forms the low voltage capacitor of the arrangement.

3,835,354
FURNITURE AND ROOM PARTITION COMPONENTS

Enrique Torres-Pena, Apartado Aereo 62-31, Bogota, Colombia

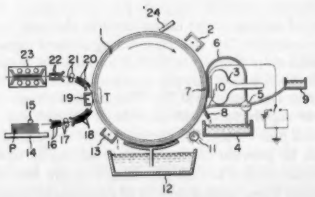
Filed Sept. 6, 1972, Ser. No. 286,819
Int. Cl. E04b 5/52; F16b 3/00
U.S. Cl. 312—257 SK 9 Claims

Furniture and room components which can readily be assembled in various combinations to form any of a wide variety of furniture units or room partition units, with the units easily disassembled when desired. The components include vertical support members, vertical and horizontal edge members, corner members and panel members. The panel members can include sliding doors, vertically hinged doors and horizontally hinged doors

3,835,355
LIQUID DISCHARGING OR CHARGING DEVICE

Syusei Tsukada, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 13, 1973, Ser. No. 387,815
Int. Cl. G03g 15/00
U.S. Cl. 317—262 A 41 Claims



A liquid discharging or charging device comprises means for supplying discharging or charging liquid to the surface of a

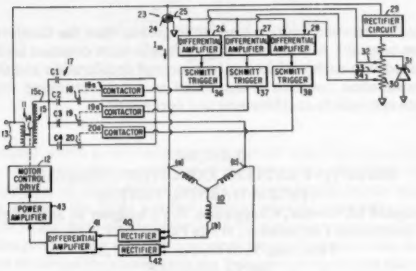
photosensitive medium in an electrophotographic copying apparatus. Means is provided to apply a reference potential to the supplied liquid. A blade bears against the surface of the photosensitive medium to remove the supplied discharging or charging liquid therefrom. Means is provided to supply lubricant liquid to the area of contact of the blade with the surface of the photosensitive medium. A container is provided for collecting therein the discharging or charging liquid removed by the blade.

3,835,356

SYSTEM FOR OPERATING THREE-PHASE INDUCTION MOTOR UNDER BALANCED CONDITIONS FOR CHANGING LOADS

Leo H. Soderholm, Ames, Iowa, assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Apr. 23, 1973, Ser. No. 353,369
Int. Cl. H02p *1/44*
U.S. Cl. 318—221 R **7 Claims**



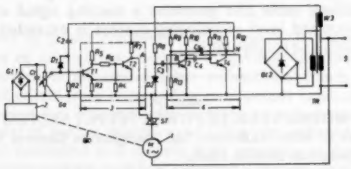
Improvements are made to an autotransformer-capacitor static phase converter for energizing a three-phase induction motor from a single-phase source which enable the motor to operate under balanced conditions for various loads. The amplitude of the derived phase voltage is changed to equalize the voltage of the two other phases, and the capacitance in the derived phase is increased as a function of load current.

3,835,357

METHOD AND APPARATUS FOR SPEED REGULATION OF ALTERNATING CURRENT MOTORS

Walter K. Holzer, Droste-Hulshoff-Weg 19, Meersburg, Germany

Filed Dec. 29, 1972, Ser. No. 319,310
Int. Cl. H02p *5/16*
U.S. Cl. 318—327 **7 Claims**



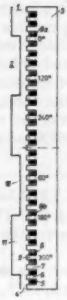
The invention relates to an apparatus and method for the speed regulation of alternating current motors. The speed of the motor is indicated by the tachometer and it is compared with a reference value indicative of a desired speed to cut off power to the motor when it exceeds the desired speed. The power remains off for a preset time and then is restored until the motor exceeds the desired speed again.

3,835,358

INDUCTIVE CONTROL PULSE GENERATING APPARATUS FOR AN ELECTRIC MACHINE

Ulrich Schuler, Berlin, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Apr. 18, 1973, Ser. No. 352,203
Claims priority, application Germany, May 5, 1972, 2222912
Int. Cl. H02k *11/00*; H02p *5/00*
U.S. Cl. 318—327 **6 Claims**



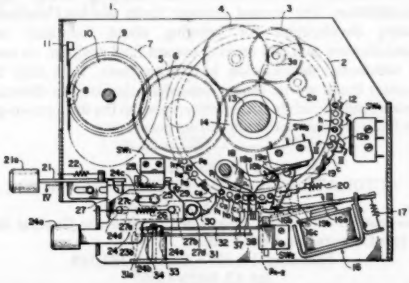
An apparatus is provided for generating control pulses for controlling the speed of an electric machine. The apparatus comprises a rotatable, serrated rotor disposed adjacent a stator provided with a plurality of spaced apart teeth on the periphery thereof. A plurality of primary and secondary windings are alternately disposed in a linear arrangement on selected ones of said plurality of said stator teeth, the primary windings being coupled to an excitation signal generator. A selected pair of the secondary windings are coupled to a pair of rectifiers, which rectify signals induced therein and generate the control pulses. These pulses are fed to an electronic amplifier which differentiates the signals to produce sharply defined control pulses.

3,835,359

ANGULAR POSITION SELECTING AND CONTROLLING DEVICE FOR A ROTARY MEMBER

Sachio Kimura; Yoshiaki Aoki; Toshiki Kiriyama, and Katsuro Shimomae, all of Tokyo, Japan, assignors to Kabushiki Kaisha Koparu, Tokyo-to, Japan

Filed Jan. 5, 1973, Ser. No. 321,465
Claims priority, application Japan, Jan. 14, 1972, 47-6497; Jan. 19, 1972, 47-8600; July 27, 1972, 47-88493
Int. Cl. G05b *11/14*
U.S. Cl. 318—467 **5 Claims**



An angular position selecting and controlling device for a rotary member enabling to easily and arbitrarily pre-select a

plural number of angular stopping positions of a rotary member by operating a button, and also enabling, by operation of another button, to stop the rotary member reliably with minimum power consumption successively at angular positions pre-selected as mentioned above, said angular position selecting and controlling device comprising a plurality of pins movably fitted along the circumference of the rotary member, two controlling levers for making those pins project from and push into the surface of the rotary member, an electromagnet having an armature which is capable of locking the rotary member at a stopped position, a stop lever engageable with the above-mentioned pins, a locking lever being engaged with said stop lever and being capable of holding the above-mentioned armature at a position where said armature is attracted by the electro-magnet, a switch for starting the rotary member by operation of the above-mentioned button and at the same time for energizing the electromagnet, and a switch for continuing the rotary motion of the rotary member being closed by the armature when said armature is attracted by the electro-magnet.

3,835,360

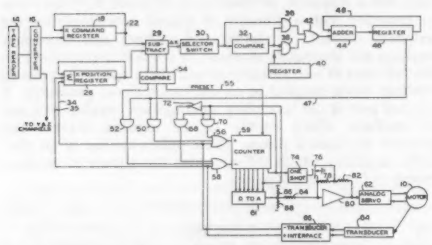
NUMERICAL CONTROL SYSTEM

William B. Kiwiet, Beaverton, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Continuation-in-part of Ser. Nos. 66,979, Aug. 26, 1970, , and Ser. No. 121,316, March 5, 1971,. This application Mar. 20, 1972, Ser. No. 236,352

Int. Cl. G05b *19/28*

U.S. Cl. 318—561 **25 Claims**



In a point-to-point control system of a modified, optimum, nonlinear type, a digital servomechanism employs an error counter receiving an input from a position-error-to-frequency-converter. The counter has a limited range, which, when exceeded, applies additional input to the servomechanism for producing rapid traverse. The error-to-frequency-converter normally receives a maximum input greater than the actual position error, until a deceleration range is detected, at which point the error-to-frequency-converter directs the servomechanism's error counter for bringing about rapid deceleration. The normal counter limits are also exceeded during deceleration for bringing about increased servomechanism gain and braking toward final position. As soon as substantial deceleration has taken place, such that the counter limits are no longer exceeded, the counter directs a deceleration which is linear with respect to the distance-to-go, for final, accurate servomechanism positioning.

3,835,361

AUTOMATIC PROXIMITY BRAKING SYSTEM FOR MOTOR VEHICLES

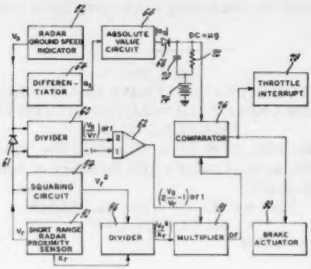
Norman W. Schubring, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 10, 1973, Ser. No. 387,349

Int. Cl. G05b *13/02*

U.S. Cl. 318—561 **3 Claims**

A vehicle braking system for automotive vehicles in which a circuit is provided for continually calculating a controllable deceleration figure which is related to the required vehicle velocity reduction over a measured headway spacing and for calculating a non-controllable deceleration constant representing maximum deceleration available for braking action. A signal is generated for effecting vehicle braking when



the deceleration figure is equal to or greater than the deceleration constant. A new, safe value of deceleration constant is obtained with each vehicle acceleration and deceleration and the deceleration constant is decreased at a predetermined rate between vehicle accelerations and decelerations.

3,835,362

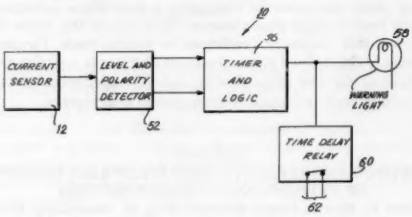
DEFECTIVE BATTERY CONDITION/CHARGING SYSTEM WARNING DEVICE

Leonard M. Greene, Chappaqua, N.Y., assignor to Safe Flight Instrument Corporation, White Plaines, N.Y.

Filed Aug. 9, 1973, Ser. No. 387,204

Int. Cl. H02j *7/00*

U.S. Cl. 320—25 **13 Claims**



A device which warns when a nickel-cadmium storage battery is defective or when the system for charging the battery is operating improperly. The device senses charging current flow in a battery cable and generates a warning signal when a predetermined level of charging current is exceeded for a predetermined length of time.

3,835,363

MOTOR VEHICLE POWER SUPPLY SYSTEM

Thomas E. Kirk, Anderson, Ind., assignor to General Motors Corporation, Detroit, Mich.

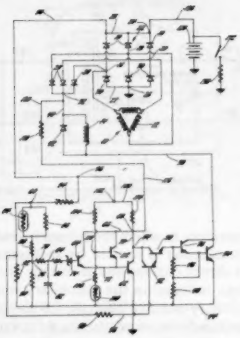
Filed Dec. 17, 1973, Ser. No. 425,264

Int. Cl. H02j *7/16*

U.S. Cl. 320—64 **2 Claims**

A motor vehicle power supply system where the direct current electrical loads in the motor vehicle are supplied by a main bridge-rectifier circuit connected to an alternating current generator. The output voltage of the generator is regulated by a transistor voltage regulator having a transistor switching means connected in series with the field winding of

the generator. The field winding is energized by a full-wave rectifier circuit comprised of three auxiliary diodes and three diodes of the main bridge rectifier connected with the AC output terminals of the alternating current generator. The voltage regulator is permanently connected with the battery of the electrical system through a first energizing circuit such that the battery biases the output transistor of the regulator into a conductive condition. This first energizing circuit includes a



resistor which is operative to limit current drain on the system during a shut-down condition of the motor vehicle. When the generator of the electrical system is driven by the motor vehicle engine, the three auxiliary diodes provide base drive current to the base-emitter circuit of the output transistor of the voltage regulator through a second energizing circuit that has less electrical resistance than the first energizing circuit that is permanently connected to the battery.

3,835,364

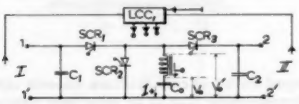
ELECTRIC POWER CONVERTERS

Willem J. C. Van Rooy, 10 Wolmaransstreet, Potchefstroom, South Africa

Continuation-in-part of Ser. No. 180,570, Sept. 15, 1971, abandoned. This application Mar. 5, 1973, Ser. No. 337,995

Int. Cl. H02m ; G05f

U.S. Cl. 321—2 **6 Claims**



A class of power converters which operate between two voltages of continuously variable magnitudes and continuously reversible polarities. It has bidirectional power flow capabilities and some degree of input to output isolation can be provided for. The converter includes a simple circuit arrangement of passive inductors and capacitors and solid state switches controlled in a specific logic sequence so that the output voltage tends to follow a desired reference voltage in spite of limited changes in an either active or passive load. The inherent high efficiency, the relatively high switching frequencies, the possibility of adapting to changing input output wave forms and the suitability to modular construction techniques make power supplies built in accordance with the invention substantially better suited for emergency interfacing systems of different power sources on board airborne or mobile vehicles.

3,835,365

CONTROL EQUIPMENT FOR AN ELECTRONIC POWER CONVERTOR

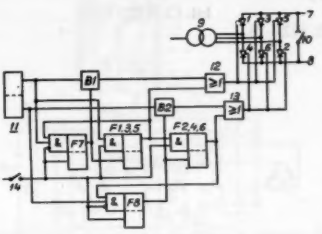
Ake Ekstrom; Per Olof Jackson, and Lenhart Jansson, all of Ludvika, Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Nov. 21, 1973, Ser. No. 418,112

Claims priority, application Sweden, Dec. 11, 1972, 16112/72

Int. Cl. H02h 7/14; H02m 1/18, 1/08

U.S. Cl. 321—11 **4 Claims**



An electronic power convertor which has a plurality of rectifiers arranged in a bridge connection is provided with a pulse generator and with connecting members in the circuit between the pulse generator and the rectifiers. Connecting members in the connection between the pulse generator and the rectifiers are controlled by control circuits which, in response to a blocking signal, render the connecting members inoperative, so that control voltage is no longer supplied to the rectifier from the pulse generator directly through the connecting members. However, the control circuit also acts to continue the supply of control voltage to one of the rectifiers which are conducting at the time that the blocking signal is initiated and to the corresponding rectifier of the same phase of the bridge, so that these two rectifiers will conduct and form a by-pass circuit. In case of deblocking of the rectifier, each commutation group of the bridge is deblocked separately by the normal control pulse for the proper rectifier of the group acting in the by-pass circuit.

3,835,366

INVERTERS SUPPLYING A HIGH FREQUENCY ALTERNATING CURRENT

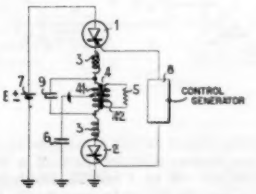
Edmond Cord Homme, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Mar. 19, 1973, Ser. No. 342,434

Claims priority, application France, Apr. 21, 1972, 72.14250

Int. Cl. H02m 7/52

U.S. Cl. 321—45 R **7 Claims**



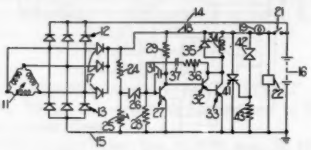
A dc to ac electric power inverter which includes a series static inverter circuit, having at least two controlled rectifiers interconnected by a self-quench circuit and alternately

switched on and off by trigger pulses. The triggering frequency is made equal to the a c output signal frequency divided by an integer greater than the number of rectifier pairs in use so that the upper frequency limit of the output signal is enhanced.

3,835,367
OVERLOAD PROTECTION CIRCUITS

David Wiley, Walsall, England, assignor to Joseph Lucas (Electrical) Limited, Birmingham, England

Filed Feb. 13, 1973, Ser. No. 332,097
Claims priority, application Great Britain, Feb. 19, 1972, 7785/72
Int. Cl. H02p 9/30
U.S. Cl. 322—28 **5 Claims**

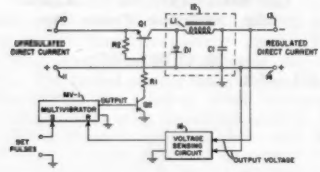


An overload protection circuit has a thyristor the anode and cathode of which are connected across a pair of supply lines requiring protection. Connected across the anode-cathode is a series circuit including a voltage dependent resistance and a resistor, the junction of which is connected to the gate of the thyristor. At the nominal voltage of the system, the voltage dependent resistance has a high value, but it has a substantially reduced value at voltages substantially above the nominal voltage of the system. The voltage dependent resistance protects the system against low current volts, and the thyristor is turned on for high current volts.

3,835,368
VOLTAGE REGULATOR FOR A DIRECT CURRENT POWER SUPPLY

James W. Williams, Lynchburg, Va., assignor to General Electric Company, Lynchburg, Va.

Filed May 21, 1973, Ser. No. 362,269
Int. Cl. G05f 1/56
U.S. Cl. 323—17 **1 Claim**

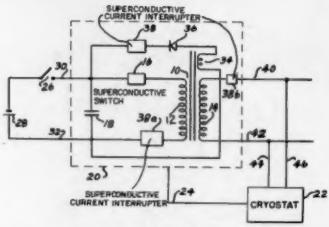


Unregulated direct current is supplied to output terminals through the emitter-collector path of a transistor that is switched on and off by a bistable multivibrator. The multivibrator is periodically set by periodically recurring set pulses to turn the transistor on and supply direct current. The multivibrator is reset by a voltage sensing circuit which produces a reset pulse to turn the transistor off in response to the voltage at the output terminals reaching a selected magnitude.

3,835,369
METHOD AND APPARATUS FOR GENERATING ELECTRICAL VOLTAGE OF AMPLITUDE VARYING WITH TIME

Jose C. Zoleta, 90-39 56th Ave., Elmhurst, N.Y. 11373

Filed Mar. 16, 1973, Ser. No. 342,146
Int. Cl. H02m 7/42
U.S. Cl. 323—44 F **19 Claims**

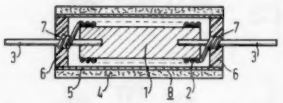


Voltage generators in which the primary winding of a superconductive transformer is excited by momentary connection to a source of direct current and is further energized responsively to voltage induced in the secondary winding by cyclic changing of primary winding current, for compensating losses internal to the transformer and associated circuitry. Control of such further energization and maintenance of transformer winding current below the current level at which the transformer windings are rendered normal are effected by superconductive current-interrupting devices.

3,835,370
DAMPENED CHOKE COIL

Hans-Peter Kaiserswerth, Regensburg; Josef Wimmer, Wenzenbach, and Rudolf Schaller, Regensburg, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Mar. 9, 1973, Ser. No. 339,736
Claims priority, application Germany, Mar. 17, 1972, 7210297[U]; Mar. 17, 1972, 7210330[U]
Int. Cl. G05f 3/02; H01f 17/06
U.S. Cl. 323—78 **1 Claim**



A damped electrical coil structure wherein either the coil and its ferromagnetic core or an associated resistor is formed in the shape of a tube and the other of the two elements is placed at the interior of the tube. The resistor and the coil are connected in parallel relationship by an electrically conductive compound which bridges the gap formed by the walls of the tube and the electrical element placed at the interior thereof.

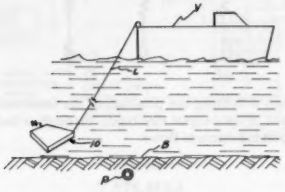
3,835,371
APPARATUS FOR DETECTING THE PRESENCE OF ELECTRICALLY CONDUCTIVE MATERIAL WITHIN A GIVEN SENSING AREA

Mohammad Kian Mirdadian, 7020 Atwell, and Robert J. Schwartz, 5446 Quinslock, both of Houston, Tex. 77035

Filed July 27, 1972, Ser. No. 275,757
Int. Cl. G01v 3/10
U.S. Cl. 324—3 **10 Claims**

A transmitter having a tuned LC circuit which is driven at resonant frequency by alternating current supplied by a

digital, square wave pulse circuit is employed with a detector provided by a second tuned LC circuit which is resonant at the transmitter frequency. The winding axis of the detector coil is perpendicular to the winding axis of the transmitter inductance coil. The detector produces an output signal at the transmitter frequency when electrically conductive materials alter the mutual inductance between the coils in the two circuits. The detected signal is amplified and filtered by active,



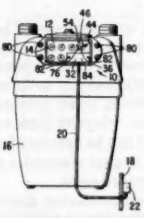
passive and synchronous filtering means and the resulting signal is transmitted to a remote location for analysis. When employed to detect the presence and location of underwater materials, the transmitter circuit and the amplifying and filtering circuits are included in a submerged probe which is connected to a surface vessel by a cable. The connecting cable preferably carries only direct current to reduce noise and eliminate the effect of cable length on proper circuit operation.

3,835,372

SWITCH CLOSURE DEVICE FOR METERS

John D. Adair, Huntington Valley, Pa., assignor to The Singer Company, New York, N.Y.

Filed May 14, 1973, Ser. No. 360,247
Int. Cl. G01n *31/02*; **H03k** *3/00*; **G08c** *19/16*
U.S. Cl. 324—28 R **3 Claims**



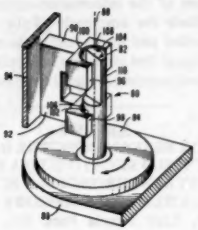
A switch closure device mounted on an index box in which the motion of an index arm turns a wheel which in turn causes a magnet to activate a reed switch. The components of the switch closure device adjacent to the index are made of clear polycarbonate plastic so as not to obscure the reading of the index. The wheel and magnet assembly are mounted internally of the index box, while the reed switch and the terminal block are mounted externally thereof. Safety of operation is assured since the switch is separated from the fluid in the meter by three seals: the stuffing box, the index box and the glass which encapsulates the reed switch. The switch closure device can provide any one of a number of pulses per unit volume, as for example, every 10, 100 or 1,000 cubic feet of metered gas.

3,835,373

ROTATIONAL POSITION SENSOR UTILIZING A HALL DEVICE AND MEANS TO MAINTAIN THE HALL VOLTAGE CONSTANT

Jerry Matula, Culver City, Calif., assignor to Pertec Corporation, Los Angeles, Calif.

Filed Feb. 12, 1973, Ser. No. 331,342
Int. Cl. G01r *33/00*
U.S. Cl. 324—34 PS **14 Claims**



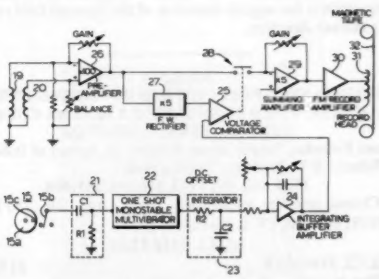
A rotational position sensor is disclosed in which a Hall Effect device mounted within an air gap of variable size within a magnetic circuit is subjected to changes in magnetic flux density in direct relation to the rotational position of a cylindrical member forming a part of the magnetic circuit. The magnetic circuit includes a C-shaped permanent magnet having opposite pole pieces forming air gaps with the cylindrical member. The cylindrical member comprises a half cylinder in the region of the air gap containing the Hall Effect device so as to vary the effective area of the gap and thus the flux density as the cylindrical member turns. The voltage of the Hall Effect device is applied to a feedback circuit including a differential amplifier so as to vary the current through the device as necessary to maintain the Hall voltage constant and provide an output voltage which varies linearly with the rotational position of the cylindrical member.

3,835,374

METHOD AND APPARATUS FOR PROVIDING SPEED COMPENSATION FOR INFORMATION CONTAINING SIGNALS IN WHICH THE THRESHOLD LEVEL OF THE DETECTOR IS VARIED PROPORTIONAL TO SPEED

David S. Frost, Mississauga, Ontario, Canada, assignor to Transcanada Pipelines Limited, Toronto, Ontario, Canada

Filed Feb. 20, 1973, Ser. No. 334,127
Claims priority, application Canada, Feb. 13, 1973, 163648
Int. Cl. G01r *33/12*
U.S. Cl. 324—37 **7 Claims**



Certain types of equipment, for example, certain types of instrument pigs used for detecting flaws in or other charac-

teristics of pipelines, employ sensing devices that derive information-containing signals having an amplitude that varies in response to a characteristic of the device being scanned by the scanning device and undesirably in response to the speed of movement of the sensing device through the device being scanned. In order to speed compensate the information-containing signal so that it can be properly interpreted, a speed responsive signal that varies in amplitude in response to the speed of movement of the sensing device is derived and is used to vary the threshold level of the information-containing signal to permit portions of the information-containing signal that exceed in amplitude the amplitude of the speed responsive signal to be recorded and to prevent portions of the information-containing signal that are lesser in amplitude than the amplitude of the speed responsive signal from being recorded.

3,835,375

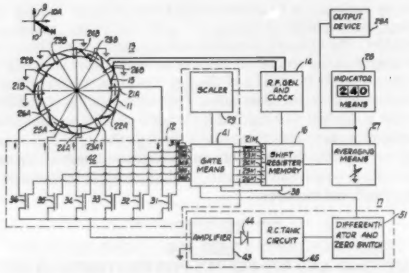
APPARATUS FOR DETERMINING THE DIRECTION OF A MAGNETIC FIELD RELATIVE TO A REFERENCE DIRECTION BY SYNCHRONOUSLY SCANNING THE FIELD AND A MEMORY

Leopold Rovner, 2201 Acacia Park Dr., Cleveland, Ohio 44124

Continuation-in-part of Ser. No. 219,725, Jan. 21, 1972. This application July 21, 1972, Ser. No. 274,069

Int. Cl. G01r *33/04*

U.S. Cl. 324—43 R **17 Claims**



An apparatus to detect the direction of an external magnetic field is disclosed incorporating a flux gate magnetometer having a plurality of sensing coil arrays. A scanner sequentially connects each sensing array to a detector to determine the sensing coil which is in alignment with the external magnetic field. A memory device having a plurality of memory units is connected to the scanner to transfer the content of a memory unit to an indicator upon detection of said alignment. The indicator numerically displays the content of the memory unit which is the angular direction of the external field relative to a marker direction.

3,835,376

METHOD AND APPARATUS FOR DETECTING UNEVEN MAGNETIC FIELD BY SWEEPING A PLASMA CURRENT ACROSS A SEMICONDUCTOR

Shoei Kataoka, Tokyo, Japan, assignor to Agency of Industrial Science & Technology, Tokyo, Japan

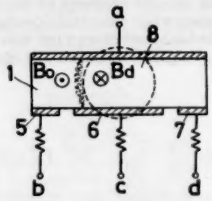
Filed Aug. 17, 1972, Ser. No. 281,408

Claims priority, application Japan, Aug. 20, 1971, 46-62929; Sept. 20, 1971, 46-72459

Int. Cl. G01r *33/06*

U.S. Cl. 324—43 R **21 Claims**

The invention disclosed provides a semiconductor device and method whereby an inverted magnetic field such as a magnetic bubble is detected by placing the semiconductor device having at least two electrodes on a magnetic body, allowing a filamentary or plasma current to sweep in the semiconductor from a first input electrode, confining the filamentary current at the boundary of a detected inverted mag-



netic field, and detecting the position of the inverted magnetic field by means of an output electrode through which the filamentary or plasma current flows.

3,835,377

THREE TERMINAL MAGNETORESISTIVE MAGNETIC FIELD DETECTOR IN WHICH VOLTAGES OF OPPOSITE POLARITY RELATIVE TO GROUND ARE APPLIED TO OPPOSITE ENDS

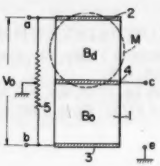
Shoei Kataoka, Tokyo, Japan, assignor to Kogyo Gijutsuin, a/k/a, Agency of Industrial Science and Technology, Ministry of International Trade and Industry, Japanese Government, Tokyo-To, Japan

Continuation of Ser. No. 121,914, March 8, 1971, abandoned. This application Mar. 28, 1973, Ser. No. 345,576

Claims priority, application Japan, Mar. 9, 1970, 45-19270

Int. Cl. G01r *33/06*

U.S. Cl. 324—46 **8 Claims**



Disclosed herein is a detector of local magnetic field, in which metallic electrodes are connected to the both ends and central part of at least one semiconductor having a magneto resistive characteristic thereby to form at least one magneto resistive element having three terminals, said element being arranged on a plane, whereby presence of a local magnetic field in said element can be detected from a voltage appearing across each of the central electrodes of said elements and a predetermined reference point.

In addition, a semiconductor displacement transducer is also disclosed, which serves to produce an output voltage having any of the polarity, positive or negative, corresponding to a magnetic field displacement, by displacing the magnetic field applied to a part of the magnetoc resistive element with three terminals.

3,835,378

SYSTEM FOR AUTOMATIC GAIN MEASUREMENT

Francis E. Edden, Huntington, and Joseph P. Engeman, East Northport, both of N.Y., assignors to Cutler-Hammer Inc., Milwaukee, Wis.

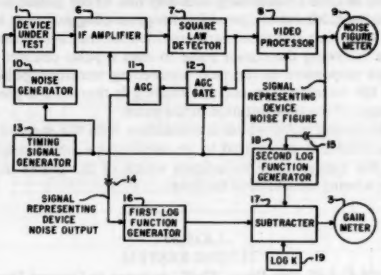
Filed Dec. 17, 1973, Ser. No. 425,601

Int. Cl. G01r *27/00*

U.S. Cl. 324—57 R **10 Claims**

An automatic measurement of gain is made with an automatic noise figure indicator by adapting the indicator to take

the quotient of two parameters of the device under test. Signals representing these parameters are inherently available



within the automatic noise figure indicator and can be used for the measurement of gain without affecting the simultaneous measurement of noise figure.

3,835,379

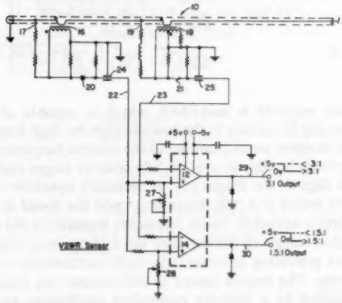
DETECTOR CIRCUITS FOR SIGNAL TRANSMISSION

Lawrence R. Templin, La Mirada, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Division of Ser. No. 251,232, May 8, 1972, Pat. No. 3,794,941. This application Jan. 28, 1974, Ser. No. 437,430

Int. Cl. G01r *27/04*

U.S. Cl. 324—58 B **6 Claims**



Standing wave ratio (VSWR) detector provides sensing and monitoring of antenna tuning for broad band signal transmission of 2 to 80 MHz by sampling of forward and reflected signals to produce a digital output for indicating high and low standing wave ratios. A load sensor provides for sampling of transmission by detecting a plurality of impedance levels for preload and tuning after selection of the preload reactance. Each impedance level has a digital output for indicating the desired pre-load reactance and a digital output for the tuned reactance. The load sensor operates concurrently with a phase sensor in different control loops to select inductive and capacitive reactances of the antenna impedance matching network to approach the desired load resistance and 0° phase condition. The tuning is continuously monitored by the VSWR detector for initiating and controlling the duration of tuning cycles according to the detected impedance matching condition to provide at least a 1.5:1 ratio.

3,835,380

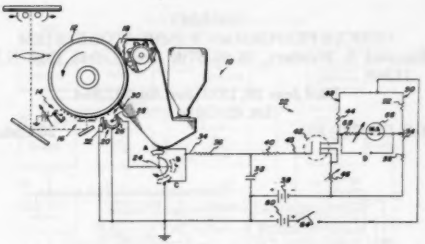
ELECTROMETER SYSTEM

John L. Webb, Fairport, N.Y., assignor to Xerox Corporation, Stanford, Conn.

Filed Aug. 14, 1973, Ser. No. 388,320

Int. Cl. G01r *29/12*

U.S. Cl. 324—72 **5 Claims**



A simple electrometer system particularly adapted for non-contact measurement of electrostatic charges in electrostatography, such as the charge level on photoreceptor surface areas in commercial xerographic machines. Structure for readily mounting the electrometer as a desired measurement position immediately prior to image development in such machines is disclosed. Stable, long term and very high resistance induced electrostatic charge retention and accurate measurement thereof is provided by a simple disclosed electrometer circuit utilizing only a few commercially available electronic components including a single semi-conductive active element. The circuit output can be read by a conventional test meter, or utilized for various machine controls. The electrometer is controlled by a simple rotary switching arrangement.

3,835,381

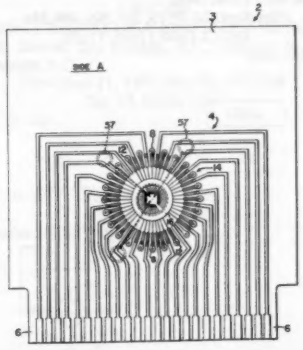
PROBE CARD INCLUDING A MULTIPLICITY OF PROBE CONTACTS AND METHODS OF MAKING

Oliver R. Garretson, and Richard C. Harmon, both of Mountain View, Calif., assignors to Tieco, Inc., Mountain View, Calif.

Continuation of Ser. No. 799,472, Feb. 14, 1969, abandoned. This application Aug. 9, 1973, Ser. No. 386,999

Int. Cl. G01r *1/06, 31/02*

U.S. Cl. 324—158 P **27 Claims**



Presented is a probe card useful in testing the effectiveness and utility of semiconductor devices and hybrid circuit sub-

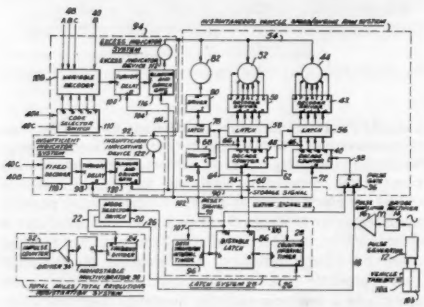
strates prior to the application to such devices and substrates of terminal leads for interconnection with other components. The probe card includes a unitary electrically conductive probe assembly including a multiplicity of closely spaced conductive probes arranged in a radiating array to provide a multiplicity of contact tips adapted to be pressed with uniform pressure and contact resistance on the terminal pads of semiconductor devices and hybrid circuit substrates. .

3,835,382

VEHICLE PERFORMANCE INDICATOR SYSTEM

Emanuel S. Weisbart, 98-40 57th Ave., Lefrak City, N.Y. 11368

Filed June 29, 1971, Ser. No. 157,964
Int. Cl. G01p *3/56*
U.S. Cl. 324—161 **20 Claims**



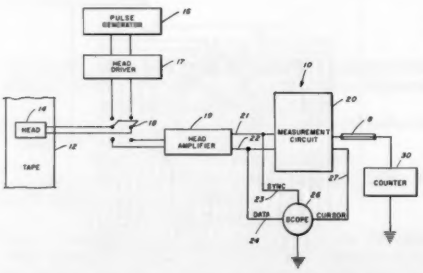
An electronic multi-mode vehicle performance indicator system selectively provides a digital display of odometer, tachometer, speedometer readings as well as other vehicle performance parameters while avoiding the disadvantages of mechanical systems which are subject to frequent breakdown. Provision is made to signal the operator of the vehicle when a preselected maximum vehicle velocity or engine rpm is being exceeded and furthermore to signal the operator when the engine rpm drops below a preset minimum level with the consequent danger of engine stall. Other vehicle parameters such as total elapsed engine revolutions is also displayed.

3,835,383

DATA PULSE WIDTH MEASUREMENT CIRCUIT

Tommy R. Crofford, Tulsa, Okla., assignor to Telex Computer Products, Inc., Tulsa, Okla.

Filed Sept. 24, 1973, Ser. No. 400,394
Int. Cl. G04f *11/06, 11/12*
U.S. Cl. 324—186 **6 Claims**



This abstract describes a system by means of which the duration of each pulse in a selected series of pulses which can be repetitively and synchronously generated, can be measured. A signal is provided at the start of each repetition of the series or train of pulses, a variable time delay means responsive to this initiating pulse generates a cursor pulse which can be positioned in time coincidence with any one of the pulses in the pulse train. Means are provided for generating pulses at each data transition and means are provided for the first transition pulse following the cursor pulse to start a pulse counter and means responsive to the next succeeding transition pulse to stop the counter. The counter reading is therefore a precise measure of the time duration of the pulse.

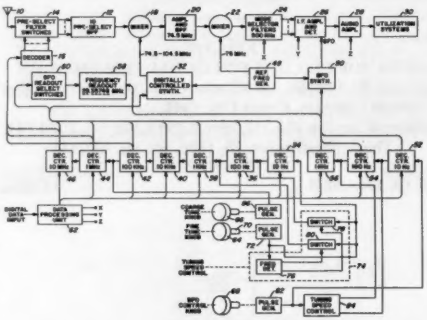
The timing pulse which is coincident with the start of the pulse train can be carried to an oscilloscope which displays also the cursor pulse to indicate which of the pulses in the train is being measured at the time.

3,835,384

TUNING SYSTEM

Ronald C. Liff, San Diego, Calif., assignor to General Dynamics Corporation, St. Louis, Mo.

Filed Dec. 20, 1972, Ser. No. 316,771
Int. Cl. H04b *1/40*
U.S. Cl. 325—25 **32 Claims**



A radio receiver is described, which is capable of being turned to any frequency in the low through the high frequency bands. A number corresponding to the desired frequency is set into a counter having several decade counter stages each for a separate digit of the frequency. A manually operable control generates pulses at a rate depending upon the speed at which the control is actuated. These pulses are inputted to the first or subsequent stages of the counter depending upon the pulse rate; thus providing automatically and continuously variable tuning rate. The counts stored in the counter are simultaneously applied to a digitally controlled synthesizer and to a digital readout which indicates the frequency to which the receiver is tuned while tuning is being carried out. The output of the digital synthesizer determines the frequency which is received by the receiver which will be accepted by the intermediate frequency stages thereof and thereby controls the tuning of the receiver. The tuning of the receiver may also be preset by applying direct digital inputs simultaneously to each of the counter stages.

3,835,385

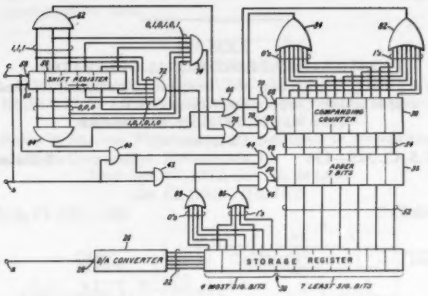
DIGITAL DELTA ENCODER AND DECODER

David F. Hoeschele, Jr., Norristown, Pa., and John D. Zubas, Ormand Beach, Fla., assignors to General Electric Company, New York, N.Y.

Filed May 18, 1973, Ser. No. 361,598
Int. Cl. H03k *13/22*
U.S. Cl. 325—38 B **5 Claims**

Amplitude varying signal is time sampled at constant clock rate (e.g. 40 kHz for voice) and sample is compared (in en-

coder) with analogue conversion of digitally stored previous value. If signal has increased, logical "1" is transmitted, if it has decreased, logical "0" is transmitted; simultaneously digitally stored value is increased for "1," decreased for "0", by increment stored in companding counter. To make increment match signal change between successive samples, com-



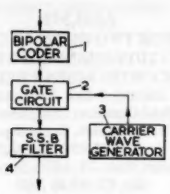
panding counter content is increased by unity for three successive "1" or "0" signals, and decreased by six successive alternating "1" and "0" signals. Decoder logic is same as encoder except that no comparator is used, encoded signals operating directly upon digital stores; analogue conversion of digitally stored value is output.

3,835,386

BINARY DATA COMMUNICATION APPARATUS

Frederick Charles Court, Lymington, England, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed May 30, 1973, Ser. No. 365,112
Int. Cl. H04b *1/68*
U.S. Cl. 325—50 **5 Claims**



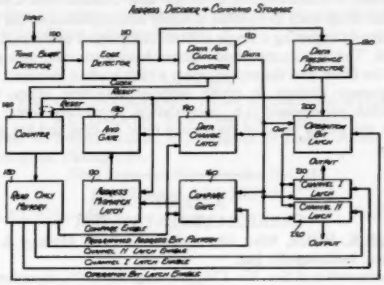
Apparatus for the single side band transmission of binary data. The apparatus comprises a coder which converts the binary data sequence to a related code sequence, gate circuit means, a carrier signal generator and a band pass filter. The related code sequence and carrier signals are applied to the gate circuit means so that the related code sequence gates the carrier signals through to the output. The output of the gate circuit means therefor comprises bursts of carrier signals. The gate circuit means are further arranged so that alternate bursts of carrier signal are in anti-phase relationship with each other. These carrier signal bursts are applied to a band pass filter. The response of the filter is such that when a half bit duration burst is applied to it the output is a burst of oscillation of twice the bit duration rising from zero amplitude to a maximum in the first bit period and falling again to zero in the second bit period. The filter's output is an amplitude and dipolar angle modulated (ADAM) signal which only occupies a single side band and can be detected at the receiver by a simple envelope detector.

3,835,387

CONTROL CIRCUITRY FOR INFORMATION TRANSMISSION SYSTEM

Earnest F. Rooks, El Monte, and David E. Lewis, Orange, both of Calif., assignors to Columbia Pictures Industries, Inc., New York, N.Y.

Filed Nov. 15, 1972, Ser. No. 306,830
Int. Cl. H04q *7/02*
U.S. Cl. 325—55 **36 Claims**



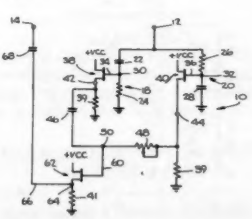
Logic circuitry for control of advisable converter-tuner stations of a cable television distribution system. The converter-tuners of the system are controlled by logic circuitry responsive to tone bursts modulated on a command carrier. The logic circuitry employs retriggerable one shot element to transform the logical bits of the command signal comprising tones into a clock signal and separate data signal, the clock signal being coherent with the data. The data in the tone bursts are encoded on a command carrier in a split phase mark mode, groups of such tones constituting a command word having address and command portions. A read only memory is used to internally generate the address of the converter receiving the command signal. Comparison circuitry is provided in order that the actual address received may be compared with the internally generated address to determine whether the unit receiving the address is in fact receiving its own address. This serial bit-by-bit comparison halts the further execution of the program by the unit at the first mismatch of an address bit. The read only memory also provides signals to control the response of the unit to the command portion of the command message in the event that the unit receiving the command message is the one addressed by the address portion thereof. A data presence detector automatically resets the system on the expiration of the command word transmission.

3,835,388

FREQUENCY ADJUSTABLE ENCODER AND DECODER

William B. Dowell, Jr., Raleigh, N.C., assignor to Aerotron, Inc., Raleigh, N.C.

Filed June 21, 1973, Ser. No. 372,348
Int. Cl. H04b *1/00*
U.S. Cl. 325—64 **16 Claims**



A completely frequency adjustable decoder and encoder circuit in a continuous tone coded squelch system of mobile

radio is made possible through the use of a new null network. This filter network is characterized by the placement of field effect transistors or other isolation devices between phase shifting portions of the network. All the requirements of frequency stability, small standard components, immunity to mechanical shock, and low cost are simultaneously possible in this decoder-encoder circuit. Large inventory reduction is possible because only one set of frequency determining components are necessary instead of a multitude, and the decoder-encoder is characterized by single unit construction. Change of one frequency to another is easily accomplished in the field by simply adjusting a single control component in the null network. This is accomplished without having to order new parts for the filter, and the replacement which is often involved. The frequency change is made without affecting other tone squelch parameters (i.e., modulation, sensitivity, etc.) and only the newly selected frequency must be checked for accuracy.

3,835,389

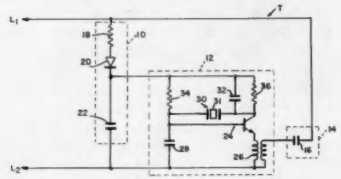
CARRIER CURRENT SYSTEM

Ralph K. Helfen, Niles, Ill., assignor to P. R. Mallory & Co. Inc., Indianapolis, Ind.

Continuation of Ser. No. 176,221, Aug. 30, 1971, abandoned. This application July 11, 1973, Ser. No. 378,092

Int. Cl. H04b 1/00

U.S. Cl. 325—64 **10 Claims**



A transmitter and a receiver are both connected to a power source. A piezoelectric resonator means is used in the transmitter to determine the frequency of a transmitted signal and a piezoelectric resonator means is used in the receiver for selective reception of the desired transmitted signal.

3,835,390

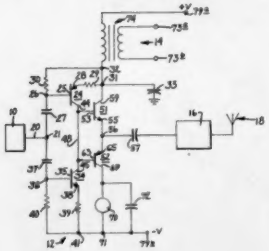
POWER OUTPUT STAGE FOR USE IN LOW-POWER RADIO FREQUENCY TRANSMITTERS

Claudio de Sa e Silva, Bozeman, Mont., assignor to Info Systems, Inc., Bozeman, Mich.

Filed Dec. 22, 1971, Ser. No. 210,651

Int. Cl. H04b 1/04

U.S. Cl. 325—105 **3 Claims**



A power output stage for use in a low-power radio frequency transmitter. The output stage includes a first complementary pair of transistors which are driven at the carrier signal frequency and at a sufficiently high power level to provide operation of the transistors in the switching mode. An emitter-follower amplification stage is connected to the first transistor pair and provides an additional power increase. A filter network connected to the output transistor pair attenuates the harmonic frequencies while allowing the fundamental carrier signal frequency to pass to the broadcast antenna.

3,835,391

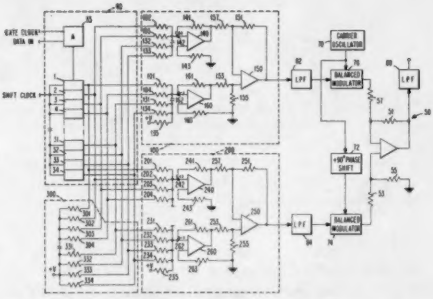
VESTIGIAL SIDEBAND SIGNAL GENERATOR

Yang Fang, Clarksburg, Md., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 21, 1971, Ser. No. 145,685

Int. Cl. H04b 1/68

U.S. Cl. 325—136 **8 Claims**



A vestigial sideband signal generation method and apparatus suitable for transmission of digital data using a single filter for baseband data wave shaping and vestigial sideband shaping.

3,835,392

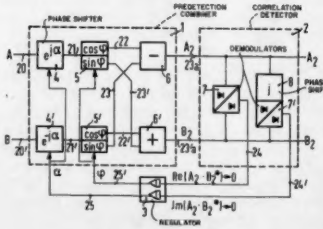
SYSTEM FOR TWO OR MORE COMBINED COMMUNICATION CHANNELS REGULATED IN ACCORDANCE WITH LINEAR RELATIONSHIPS

Helmut Mahner, Munich, and Karl Kammerlander, Wolfratshausen, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Continuation of Ser. No. 94,850, Dec. 3, 1970, abandoned. This application Mar. 28, 1973, Ser. No. 345,774

Int. Cl. H04b 1/06

U.S. Cl. 325—306 **3 Claims**



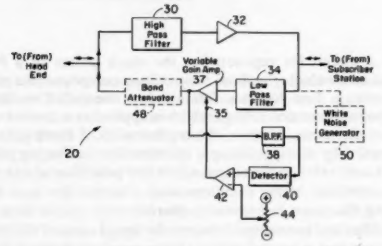
Two or more communication channels containing coherent signals of respectively different amplitudes and phases aside

from respective uncorrelated spurious signals of mutually equal intensities, are combined to a channel of optimal signal-to-noise ratio. This is done by transforming the original signals in a combiner network to an equal number of linear combinations, and regulating the respective transformations by controlling real parameters thereof so as to eliminate correlation between the linear combinations. As a result, the combined signal of the output channel exhibits the desired optimum of signal-to-noise ratio.

3,835,393
DUPLEX CABLE COMMUNICATIONS NETWORK EMPLOYING AUTOMATIC GAIN CONTROL UTILIZING A BAND LIMITED NOISE AGC PILOT

Henry B. Marron, Moorestown, N.J., assignor to Jerrold Electronics Corporation, Philadelphia, Pa.

Filed Apr. 17, 1972, Ser. No. 244,470
Int. Cl. H04b *3/56, 1/60*
U.S. Cl. 325—308 **5 Claims**

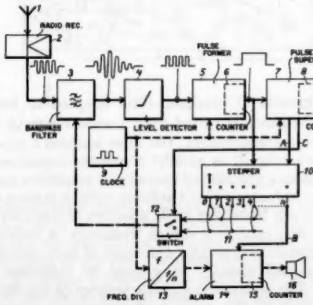


A full duplex private communications network provides independent automatic gain control circuitry for the oppositely-propagating signals. Band limited white noise is used to effect automatic gain control for information converging in the distribution network towards common head end equipment. Automatic gain control for this reverse direction propagation is thereby made insensitive to frequency and phase perturbations of any AGC pilot, and also performs well notwithstanding malfunctions in system communications links.

3,835,394
CODE RECEIVER IN STAFF LOCATOR

Nils Tomas Stolt, Bromma, and Dag E:son Akerberg, Ektorp, both of Sweden, assignors to Telefonaktiebolaget L. M. Ericsson, Stockholm, Sweden

Filed Feb. 1, 1973, Ser. No. 328,685
Claims priority, application Sweden, Feb. 9, 1972, 1500/72
Int. Cl. H04b *5/04*
U.S. Cl. 325—321 **6 Claims**

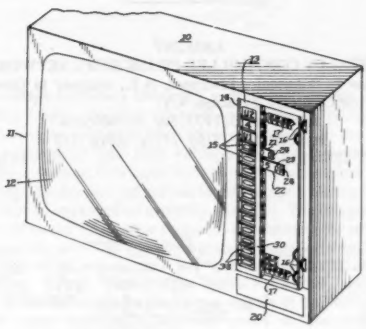


A device is in a staff locator receiver for decoding of radio calls destined to that receiver. The device contains a bandpass filter, switchable between preselected frequencies. A decoder in the device contains purely digital circuits, i.e., a level detector, a pulse former, a pulse time supervisor which discards the call if a pulse in the call does not pass the bandpass filter within the correct time period, a stepping device which for each pulse advances one step and sets the bandpass filter in accordance with a code word assigned to the receiver and an alarm arrangement which signals when a complete call is accepted. A digital clock oscillator is common to all digital circuits. The decoder discriminates between two different call words assigned to one receiver, basing the discrimination on the type of start pulse for the call.

3,835,395
TELEVISION CHANNEL INDICATING TAB WITH AUTOMATIC VHF/UHF SWITCHING

Dennis D. Smith, Skokie, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed Sept. 4, 1973, Ser. No. 394,034
Int. Cl. H04n *5/50;* **H03j** *5/12*
U.S. Cl. 325—459 **7 Claims**



A combination UHF-VHF television tuner system has a plurality of tuning positions each including an individual potentiometer for adjusting the tuning voltage of an appropriate varactor-diode tuner, and a flexible plastic channel number indicator tab, which when illuminated, yields a visible indication of the tuning position selected and the channel number of the television signal programmed at the selected tuning position. A common contact strip is provided at the tuning positions for switching between UHF and VHF operating modes and each tuning position also includes an individual spring contact, self-biased into engagement with the common contact. The channel number indicator tab is coded in accordance with its channel number designation to selectively separate the individual and common contacts. In the preferred embodiment, the indicator tab has an aperture permitting engagement of the individual and common contacts.

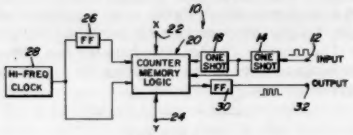
3,835,396
DEVICE FOR CHANGING FREQUENCY OF CONSTANT AMPLITUDE SQUARE WAVES

Gary A. Demos, 1153 Descanso Dr., Los Angeles, Calif. 91011, and David S. Ruhoff, P.O. Box 4492, Los Angeles, Calif. 91106

Filed Sept. 12, 1973, Ser. No. 396,372
Int. Cl. H03k *21/06*
U.S. Cl. 328—41 **15 Claims**

An input signal having a constant amplitude, square wave form shape, is reproduced with the same square wave form and amplitude but at a frequency that is equal to the input frequency multiplied and divided by two factors externally

programmed into a logic section within which a fixed frequency clock signal is compared with the input frequency. The clock signal divided by one of the externally programmed factors drives an input counter until reset by the input signal to



produce a number loaded into an output counter in a down counting operational mode to produce an output signal which is divided by the other externally programmed factor either before or after counting of the clock signal.

3,835,397

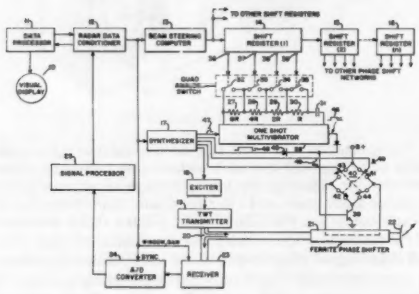
DIGITALLY CONTROLLED PHASE SHIFT NETWORK

Nicholas F. D'Antonio, Liverpool, N.Y., assignor to General Electric Company, Syracuse, N.Y.

Filed Oct. 23, 1973, Ser. No. 409,018

Int. Cl. H03k *17/66, 17/14;* **H01p** *1/32*

U.S. Cl. 328—155 **9 Claims**



The present invention relates to a digitally controlled phase shift network for use with an individual antenna element, as would form a part of a phased array radar system wherein a directional beam is formed and electrically scanned by control of the phase of each individual antenna element. The phase shift network here described is responsive to a computed digital signal which it converts in an electrically switched resistance-capacitance timing network to a pulse whose duration is an analog quantity stepped in equivalence to the digital input. The variable duration pulse is used to control the volt time area of a source of magnetizing energy to achieve stepped remanent states in the ferrite phase shifters corresponding to stepped angles of phase shift. A direct conversion of a digital signal into an analog phase shift angle is achieved while also providing electronic compensation for nonlinearity in the magnetization characteristics of the ferrite and for temperature drift.

The invention herein described was made in the performance of a contract with the Department of the Army.

3,835,398

CLOCK PULSE REGENERATOR

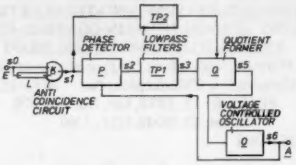
Peter Russer, Senden/Iller, Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H, Frankfurt am Main, Germany

Filed Aug. 3, 1973, Ser. No. 385,238

Claims priority, application Germany, Aug. 3, 1972, 2238172

Int. Cl. H03b *1/00*

U.S. Cl. 328—164 **1 Claim**



In a circuit for regenerating the clock pulses of a PCM signal and including a phase control loop composed of a phase detector, a first lowpass filter and a controlled oscillator producing a control voltage which is applied as a control voltage to the phase detector, the regeneration of clock pulses is improved by also providing a quotient former having a first input connected to the output of the low pass filter and an output connected to the oscillator, and a second low pass filter having the same transmission characteristic as the first low pass filter and connected between the signal input of the phase detector and a second input of the quotient former. These added components cooperate with the other components of the circuit to produce a regenerated clock pulse which is free of phase fluctuations due to frequency and amplitude fluctuations in the received signal.

3,835,399

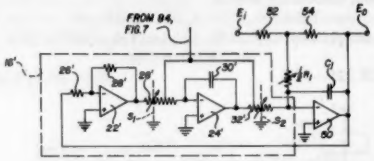
ADJUSTABLE ELECTRONIC TUNABLE FILTER WITH SIMULATED INDUCTOR

Robert S. Holmes, 151 Westland Ave., Rochester, N.Y. 14618

Continuation of Ser. No. 220,059, Jan. 24, 1972, abandoned. This application June 4, 1973, Ser. No. 366,638

Int. Cl. H03b *1/04*

U.S. Cl. 328—167 **5 Claims**



A stable tunable Q bandpass filter adapted to have its parameters dynamically varied over a wide range of bandwidths and center frequencies. The filter includes a capacitor and a network coupled in parallel across the capacitor. The network includes a plurality of operational amplifiers coupled to simulate an inductor without utilizing coils. A feature of the filter is that it can be readily made adaptive to track an input signal which may randomly vary in frequency. A further feature of the invention is to have one input of each operational amplifier coupled directly to ground to minimize stray capacitance. The performance characteristics of this filter are in part attained by the method of component layout and shielding techniques used, in addition to the method of circuit excitation.

3,835,400

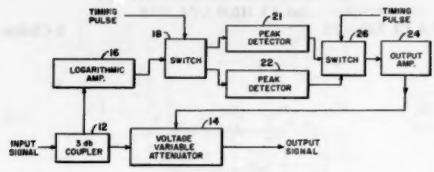
SEQUENTIAL AUTOMATIC GAIN CONTROL CIRCUIT

William G. Briscoe, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed July 25, 1973, Ser. No. 382,628

Int. Cl. H03k *5/18*; H03g *3/20*

U.S. Cl. 328—168 2 Claims



The sequential automatic gain control circuit is an improved AGC circuit that can be used in search and track radars which receive a series of pulse returns from each target. The sequential AGC is well suited for monopulse radars and moving target indication (MTI) processing where gain stability and gain match between channels are required. The maximum input signal levels are sensed by a pair of AGC circuits which alternately provide output levels for a predetermined time. The output signal levels are proportional to the maximum input signal received during the previous pulse return period.

3,835,401

SIGNAL CONTROL CIRCUIT

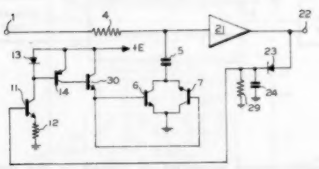
Masao Tomita; Kiyoji Fujisawa, and Takashi Miura, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jan. 26, 1973, Ser. No. 326,696

Claims priority, application Japan, Feb. 1, 1972, 47-011658; Feb. 8, 1972, 47-014255; Feb. 8, 1972, 47-014256

Int. Cl. H03f *1/32*; H03g *3/20*; H03k *5/08*

U.S. Cl. 328—172 17 Claims



A signal control circuit has two transistors. The collector and the emitter of the first transistor are connected to the emitter and the collector of the other transistor, respectively, and the bases of the two transistors are grounded. The amplitude of a signal applied to the junction of the collector of the first transistor and the emitter of the other transistor through a resistor and a capacitor from an input terminal is controlled according to a control signal applied to the junction of the bases of the two transistors.

3,835,402

VOLTAGE-FREQUENCY CONVERTER

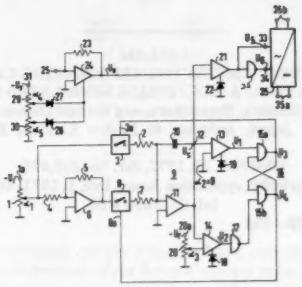
Christian Kublick, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Mar. 12, 1973, Ser. No. 340,056

Claims priority, application Germany, Mar. 16, 1972, 2212792

Int. Cl. H03k *4/08*

U.S. Cl. 328—181 11 Claims



A voltage-frequency converter is disclosed and has an integrator which acts as a sawtooth generator. A positive or negative input voltage is alternatively connected to the input of the integrator and both voltages are proportional to a reference voltage. One input voltage is preferably taken off at a voltage divider and the second input voltage is derived from the other by means of an inverting amplifier. The integrator is followed by two limit-value stages for determining the reversal points of the sawtooth voltage. Datum voltages are supplied to the limit-value stages and are also proportional to the reference voltage. The voltage appearing at the integrator input is disconnected by the output signals of the limit-value stages upon reaching a reversal point of the sawtooth waveform whereupon the voltage of the opposite polarity is connected. The frequency generated by the voltage-frequency converter is independent of the reference voltage.

3,835,403

STEPWISE CURRENT ADJUSTING SYSTEM

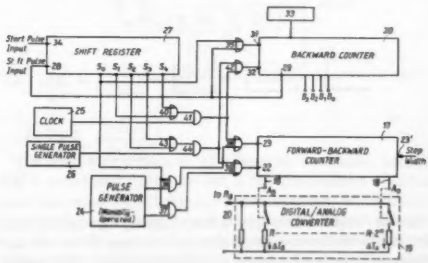
Klaus Leinemann, Leopoldshafen, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Sept. 18, 1972, Ser. No. 289,605

Claims priority, application Germany, Sept. 28, 1971, 2149106

Int. Cl. H03k *4/02*

U.S. Cl. 328—186 6 Claims



In an improved system for stepwise current adjustment, particularly adapted for adjusting the lens current of electron

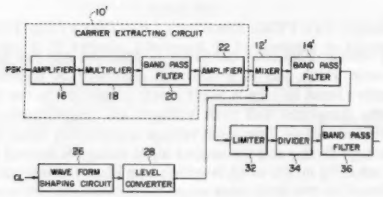
microscopes, a setting device for providing accurate voltage increments to the input of a control and regulating circuit for electromagnetic lenses includes a forward-and backward digital counter connected to the control means through a digital-to-analog converter. A shift register controlled by a backward counter connects counting signal inputs to the forward-and-backward counter via interlinking logic circuits to permit manual selection of a predetermined output from the setting device, corresponding to an assumed focus condition followed by automatic stepwise variation of the setti.ıg device ouput through a selected range about the predetermined value.

3,835,404

EXTRACTING CIRCUIT FOR REPRODUCING CARRIER SIGNALS FROM A MULTIPHASE MODULATED SIGNAL

Hiroshi Nakamura, Sagamihara, and Hiroaki Ohyama, Tokyo, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Nov. 29, 1972, Ser. No. 310,475
Claims priority, application Japan, Dec. 1, 1971, 46-96995
Int. Cl. H03k 9/00
U.S. Cl. 329—104 **6 Claims**



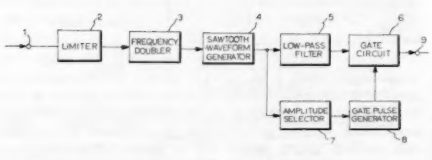
A carrier reproducing circuit for demodulating a signal transmitted by a pulse coded modulation-multiphase modulation system in which the output of a carrier extracting circuit is sampled by a clock pulse of a bit repetitive frequency in a sampling circuit and the sampled output is applied to a band-pass filter having a pass band of a carrier frequency to reproduce a carrier of reduced phase jitter.

3,835,405

FM DEMODULATION SYSTEM

Katsutoshi Nishimura, Osaka; Kiyoji Fujisawa, Nara, and Toshikazu Yosumi, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co. Ltd., Osaka, Japan

Filed July 16, 1973, Ser. No. 379,338
Int. Cl. H03d 3/18
U.S. Cl. 329—126 **3 Claims**



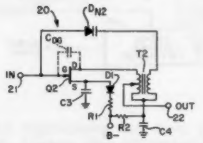
An FM demodulation system has a limiter, a frequency doubler, a sawtooth-wave generator, a low-pass filter, an amplitude selector and a noise suppressing circuit. The output voltage of the sawtooth-wave generator is proportional to the frequency deviation of the FM signal and becomes large when a noise occurs. During the occurrence of noise, the amplitude selector which is coupled to the output of the saw-tooth generator generates a signal for controlling the characteristics of the signal path in the noise suppressing circuit, so that a noise component does not appear at the signal output terminal.

3,835,406

NEUTRALIZED AMPLIFIER CIRCUIT

Wallace T. Thompson, East Amherst, N.Y., assignor to GTE Sylvania Incorporated, Stanford, Conn.

Filed Oct. 2, 1972, Ser. No. 293,911
Int. Cl. H03f 1/14, 3/16
U.S. Cl. 330—27 **6 Claims**



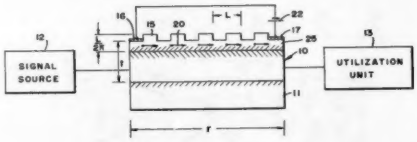
A neutralized amplifier stage including a bipolar or a field effect transistor and having an output transformer. A variable capacitance diode is connected from the secondary winding of the transformer to the input electrode of the transistor. The capacitive effect of the diode varies with applied voltage thereby instantaneously balancing the internal capacitance of the transistor, which also varies with applied drive or B+ voltage, over a wide dynamic operating range.

3,835,407

MONOLITHIC SOLID STATE TRAVELING WAVE TUNABLE AMPLIFIER AND OSCILLATOR

Amnon Yariv, and Avraham Gover, both of Pasadena, Calif., assignors to California Institute of Technology, Pasadena, Calif.

Filed May 21, 1973, Ser. No. 362,821
Int. Cl. H03f 3/04
U.S. Cl. 330—5 **10 Claims**



A travelling wave amplifier of signals in the millimeter wavelength range consists of a monolithic solid state waveguide structure wherein space harmonics of the input electromagnetic energy wave (signals) are generated due to periodic corrugations of the guide's top surface. The waveguide structure includes a current conductive layer supportive of a stream of electrons with an electron velocity v_e, the stream of electrons being located where the amplitude of the spatial first harmonic is a maximum The corrugation periodicity L is selected so that the equality $v_e = K(\omega/\pi)L$ is satisified. In the equality, ω is the angular frequency of the input wave and K is a factor which is not less than and on the order of one.

3,835,408

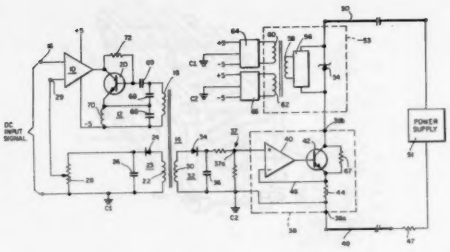
DC SIGNAL TRANSLATOR WITH A VARIABLE AMPLITUDE OSCILLATOR

William John Shaffer, Sumneytown, Pa., assignor to Leeds & Northrup Company, North Wales, Pa.

Continuation-in-part of Ser. No. 284,081, Aug. 28, 1972, abandoned. This application Aug. 3, 1973, Ser. No. 385,598

Int. Cl. H03f 3/38

U.S. Cl. 330—10 17 Claims



A DC signal translator having an output DC isolated from the input comprises a variable amplitude oscillator generating an oscillating output signal having an amplitude directly related to the magnitude of the DC supply voltage for the oscillator. A DC isolating transformer is associated with the oscillator. A feedback rectifying circuit is coupled between the DC isolating transformer and the input of an amplifier so that the oscillator's DC supply voltage, and hence, AC amplitude, is continuously adjusted so as to maintain a portion of the rectified DC feedback signal very nearly equal to the input signal. An output rectifying circuit which is matched with the feedback rectifying circuit is coupled to the isolating transformer so as to produce a DC output signal corresponding to the DC input signal while maintaining DC isolation between the input and the output of the DC signal translator.

3,835,409

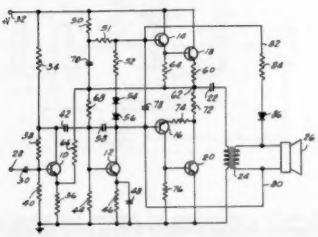
AMPLIFIER DISTORTION CIRCUIT FOR ELECTRIC GUITARS

William G. Laub, 920 Greenwood, Winnetka, Ill. 60093

Filed Sept. 25, 1973, Ser. No. 400,666

Int. Cl. H03f 3/18; G10h 1/06

U.S. Cl. 330—13 5 Claims



An amplifier for use with electric guitars for amplifying an electrical signal for application to a loudspeaker includes means for introducing crossover distortion in proportion to the amplitude of the electrical signal.

3,835,410

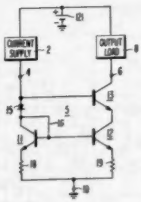
CURRENT AMPLIFIER

Harold Allen Wittlinger, Pennington, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 26, 1972, Ser. No. 318,645

Int. Cl. H03f 3/42

U.S. Cl. 330—19 6 Claims



A three-terminal current amplifier has a current gain substantially independent of the forward current gains of its component transistors. It employs a first transistor with collector-to-base feedback regulating its collector current flow to equal applied input current and a second transistor having a base emitter circuit in parallel with that of the first transistor. Output current from the collector electrode of the second transistor consequently is proportional to the input current. Means are provided for maintaining the collector potentials of the first and second transistors substantially equal to help maintain a fixed relationship between the output and input current amplitudes.

3,835,411

ADJUSTABLE EQUALIZING NETWORK

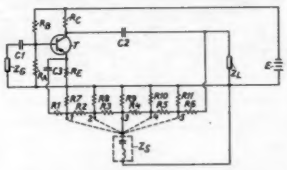
Bengt Jonas Timoteus Carleson, Stockholm, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Aug. 4, 1972, Ser. No. 277,891

Claims priority, application Sweden, Aug. 27, 1971, 10911/71

Int. Cl. H03f 3/04

U.S. Cl. 330—31 6 Claims

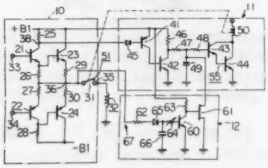


The invention relates to an adjustable equalizing network that is principally suited for use in the transmission of carrier wave telephone signals through a coaxial cable. While heretofore known equalizing networks comprise T-type networks with inverse frequency dependent impedances in their shunt and series branches respectively, the equalizing network of the invention comprises a T-type network in which the series branch includes only resistive elements and the shunt branch alone is provided with a frequency dependent impedance.

3,835,412
TRANSISTOR AMPLIFIER PROTECTIVE CIRCUIT

Masatsugu Honda, and Masanobu Shinozaki, both of Yokohama, Japan, assignors to Victor Company of Japan Limited

Filed Nov. 2, 1973, Ser. No. 412,092
Claims priority, application Japan, Nov. 6, 1972, 47-127171; Dec. 7, 1972, 47-122043; Dec. 7, 1972, 47-122044
Int. Cl. H03f 1/00
U.S. Cl. 330—207 P 5 Claims

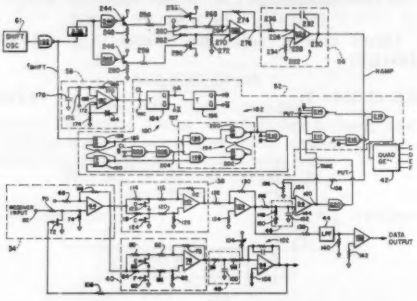


A protective circuit for protecting a transistor amplifier against excessive current flowing therethrough, which comprises voltage response switching means, and improved control means, provided for protecting the transistor amplifier. The improved control means is intended to control the sensitivity of the voltage responsive switching means.

3,835,413
CRYSTAL PHASE-LOCKED LOOP

Philip L. Epstein, Elizabeth, N.J., assignor to Quindar Electronics, Inc., Springfield, N.J.

Filed June 16, 1972, Ser. No. 263,538
Int. Cl. H03b 3/04
U.S. Cl. 331—1 A 10 Claims

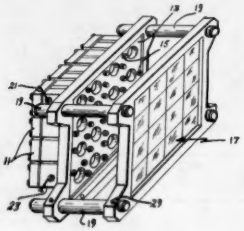


A phase-locked loop comprises a crystal voltage controlled oscillator for generating an output signal having a frequency related to an input signal, a phase detector for selectively combining an incoming signal and the output signal of the crystal voltage controlled oscillator and for generating an output signal which contains the sum and difference frequencies of the combined signals, and a low pass filter for filtering out the sum frequency signal. The difference frequency signal at an output of the loop filter is applied to the crystal voltage controlled oscillator for controlling the frequency of the signal at the output thereof.

3,835,414
GALLIUM ARSENIDE ARRAY

William E. Ahearn, Purny Station, N.Y., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Mar. 24, 1972, Ser. No. 238,708
Int. Cl. H01s 3/02
U.S. Cl. 331—94.5 3 Claims

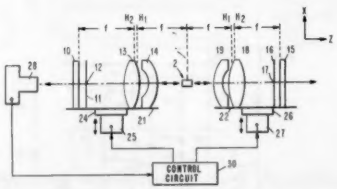


A gallium arsenide laser array in which laser modules are mounted on a printed circuit support plate. Each module has a housing creating a cavity and shaped substantially as a pair of cones with opposing vertices. At the junction of the vertices there is a stack of gallium arsenide diode chips each of the chips being mounted on a heat sink with dielectric spaces therebetween. Each module has a spherical mirror positioned to reflect the laser beam through openings in the support plate. A lens array is mounted with support rods to the support plate with each lens of the array corresponding to a laser module.

3,835,415
HIGH RADIANCE SEMICONDUCTOR LASER

Elizabeth Maria Rutz, Bethesda, and Morton Richard Kagan, Potomac, both of Md., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 28, 1972, Ser. No. 266,904
Int. Cl. H01s 3/00
U.S. Cl. 331—94.5 S 22 Claims



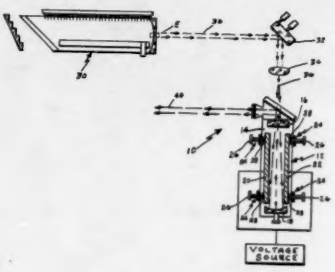
A diffraction-limited semiconductor laser system capable of a high radiance output which features means for controlling automatically the alignment of a p-n junction of the semiconductor laser with respect to an external resonating cavity. The control means operates to maintain automatically the alignment of the resonating cavity components along the narrow dimension of the external surface of the junction, thereby maximizing the power of the coherent radiation.

3,835,416

TUNABLE OFF RESONANT OPTICALLY PUMPED LASER

Howard R. Schlossberg, Lexington; Harold R. Fetterman, Waltham, and Jerry Waldman, Lexington, all of Mass., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Mar. 13, 1973, Ser. No. 340,810
Int. Cl. H01s 3/09
U.S. Cl. 331—94.5 P 5 Claims



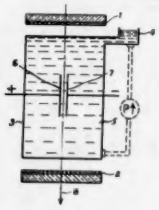
A tunable off resonant optically pumped laser system in which a high power pulsed laser is utilized to optically pump a molecular gas having a vibrational absorption band near the laser frequency. The electric field of the pumping laser is at least as great as a predetermined strength so that upon the application of a D.C. electric field on the absorbing gas the resultant submillimeter laser oscillation is capable of being tuned.

3,835,417

METHOD AND MEANS FOR EXCITING LIQUID LASERS

Fritz Peter Schafer, Gottingen-Nikolausberg, Germany, assignor to Carl Zeiss-Stiftung, Wuerttemberg, Germany

Continuation-in-part of Ser. No. 120,531, March 3, 1971, abandoned. This application June 19, 1973, Ser. No. 371,361
Int. Cl. H01s 3/00
U.S. Cl. 331—94.5 L 10 Claims



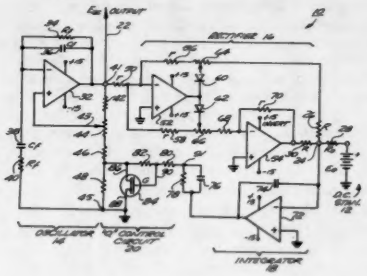
Liquid lasers are excited by generating a flow of electric current through a laser-cell liquid which comprises a solute capable of fluorescing when subjected to the current and dissolved in an aprotonic (also known as an aprotic) solvent. The ions of said solute serve as the carrier ions of the current. More than one solute may be used, in which case, the added solute is excitable to selective emission by transfer of energy from the first solute, and its fluorescence contributes to the ability of the first solute to effect laser emission.

3,835,418

STABILIZED ALTERNATING CURRENT SOURCE

Roswell W. Gilbert, New York, N.Y., assignor to RFL Industries, Inc., Boonton Township, N.J.

Filed Oct. 17, 1972, Ser. No. 298,257
Int. Cl. H03b 3/02
U.S. Cl. 331—141 13 Claims



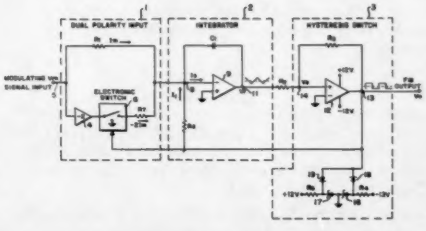
An extremely stable and accurate d.c. source such as a standard cell is used to control very precisely the magnitude of an a.c. voltage produced by an oscillator. The oscillator output is rectified by means of a full-wave rectifier, and is compared with the voltage of the d.c. standard. Any difference between the standard and the rectified value of the oscillator voltage is integrated by an integrator circuit with a relatively long time constant, and then is used to drive a circuit which controls the "Q" of the oscillator by negative feedback. This precisely regulates the magnitude of the oscillator output. Preferably, the "Q" control circuit includes at least one field effect transistor (FET) connected in a bridge network. The FET is used as a voltage-sensitive, relatively distortion-free resistor. In the preferred embodiment of the invention, a "biquad" oscillator is used to produce three output voltages, the phases of which are separated by 90°. Amplitude of the output voltages is controlled with a high degree of precision by means of the technique described above, except that the "Q" control circuit uses two FET bridge circuits connected in push-pull.

3,835,419

CURRENT SWITCHING FREQUENCY MODULATOR

David T. Milne, Silver Spring, Md.; David J. Plumpe, Springfield, and David E. Armstrong, Alexandria, both of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 18, 1973, Ser. No. 352,400
Int. Cl. H03c 3/08
U.S. Cl. 332—16 R 17 Claims



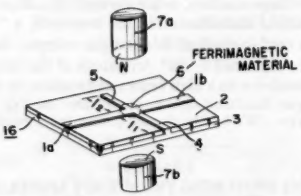
The linear frequency modulator of the invention is comprised of a dual polarity input circuit coupled to a VCO. The VCO includes a closed loop integrator-hysteresis switch circuit which continuously oscillates to produce a square wave

output from the hysteresis switch. The magnitude of the square wave is held substantially constant and fed back to the integrator. The integrator alternately produces positive and negative ramp voltages whose slopes are proportional to the substantially constant magnitude of the square wave. The hysteresis switch reverses the polarity of its output thus causing the integrator to reverse its direction of integration when the ramp voltages attain a value proportional to the substantially constant square wave magnitude. The resultant output of the integrator is a triangular wave having a center frequency which remains substantially constant as any drift of the square wave magnitude will have opposite effects on the ramp slopes and voltage value at which the ramps change direction. The dual polarity input is responsive to the square wave to add the modulating signal directly to the square wave prior to integration when the square wave is positive and to add the modulating signal with its polarity reversed to the square wave when the square wave is negative. The slopes of the triangular wave output from the integrator are thus caused to increase or decrease depending on the original polarity of the modulating signal. As the ramp switching values are held constant the frequency of the triangular wave and consequently the frequency of the square wave hysteresis switch output are caused to vary in amount proportional to the modulating signal amplitude.

3,835,420
ISOLATOR

Nobutake Orime; Hidetoshi Kurebayashi, and Shojiro Nakahara, all of Kamakura, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Kanagawa-ken, Japan

Filed July 23, 1973, Ser. No. 381,623
Claims priority, application Japan, July 26, 1972, 47-74832; Aug. 4, 1972, 47-78148; Nov. 10, 1972, 47-112715
Int. Cl. H01p 1/32
U.S. Cl. 333—24.2 **8 Claims**



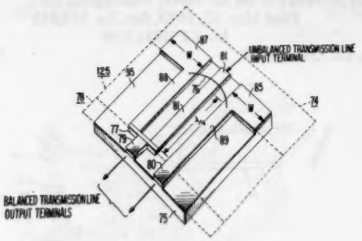
An isolator has a dielectric substrate such as a composite substrate or a single ferrimagnetic substrate; a magnetic material inserted in a hole of the dielectric substrate in the thickness direction thereof; a single plate conductor placed on one surface of the dielectric substrate; a main line conductor placed on the other surface of the dielectric substrate and over the magnetic material; a branch line conductor and a subbranch line conductor branching from the main line conductor; wherein one end of the line conductor is opened and the other end of the line conductor is connected to the single plate conductor.

3,835,421
MICROWAVE TRANSMISSION LINE AND DEVICES USING MULTIPLE COPLANAR CONDUCTORS

Robert Eugene De Brecht, Cranbury, and Louis Sebastian Napoli, Hamilton Square, both of N.J., assignors to RCA Corporation, New York, N.Y.

Division of Ser. No. 315,087, Dec. 14, 1972. This application Sept. 27, 1973, Ser. No. 401,554
Int. Cl. H01p 5/10; H03h 7/42
U.S. Cl. 333—26 **2 Claims**

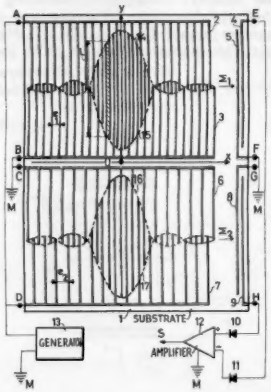
Three coplanar conductive surfaces on the top surface of a dielectric substrate form a microwave transmission line having first and second transmission modes used in the construction and operation of various microwave devices, such as amplifiers unbalanced-to balanced transmission line transformers and directional couplers.



3,835,422
SURFACE WAVE FREQUENCY DISCRIMINATOR

Pierre Hartemann, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Jan. 10, 1973, Ser. No. 322,544
Claims priority, application France, Jan. 14, 1972, 72.1268
Int. Cl. H03h 9/26; H03d 3/26
U.S. Cl. 333—72 **9 Claims**

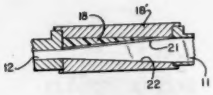


The present invention relates to frequency discriminators. The frequency discriminator in accordance with the invention comprises a pair of surface wave electromechanical filters deposited upon a single substrate; the spectral responses of the filters are offset in frequency and have a triangular profile so that by subtraction of the detected voltages at the output of these filters, an S characteristic is obtained.

3,835,423
BROADBAND WAVEGUIDE WITH MEANS FOR SUPPRESSING TE MODE

Frank E. Parisi, Waltham, Mass., assignor to Adams-Russell Co., Inc., Waltham, Mass.

Filed Apr. 20, 1973, Ser. No. 352,925
Int. Cl. H01p 1/16, 5/08
U.S. Cl. 333—98 M **8 Claims**

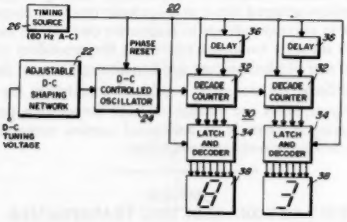


A rectangular waveguide dimensioned to propagate the TE_{10} mode includes at each end of the waveguide terminations for terminating the TE_{20} mode comprising slotted tapered ridges with lossy cavities closing the slots.

3,835,424
CHANNEL INDICATOR AND DISPLAY ARRANGEMENT UTILIZING D-C TUNING VOLTAGES OF VARACTOR TUNER

Charles J. Marik, Chicago, Ill., assignor to Motorola, Inc., Chicago, Ill.

Filed Nov. 28, 1973, Ser. No. 419,736
Int. Cl. H03j 1/04
U.S. Cl. 334—87 **10 Claims**



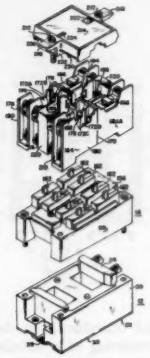
An improved channel indicator and display arrangement especially suited for television receivers with varactor tuner mechanisms. The disclosed arrangement operates directly from the dc tuning voltages themselves wherein the output frequency of a dc controlled oscillator is made to track the various channels selected by virtue of a dc shaping network. The output of the controlled oscillator is fed directly to one or more counter/decoder/display units, preferably in integrated circuit form, wherein the signal information is counted, decoded and reset to selectively control one or more display devices such as a Numatron tube or the like.

3,835,425
ELECTROMAGNETIC RELAY WITH REVERSIBLE SWITCH MODULES

Walter C. Karch, Grafton; Kenneth J. Marien, and Robert C. Mierendorf, Wauwatosa, all of Wis., assignors to Square D Company, Park Ridge, Ill.

Filed Nov. 1, 1973, Ser. No. 412,055
Int. Cl. H01h 50/04
U.S. Cl. 335—132 **13 Claims**

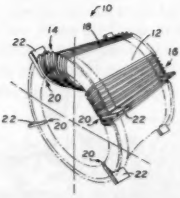
A relay having switching modules which permit the switching functions of the relay to be easily converted to provide normally open or normally closed contact functions without disturbing the wiring to the relay. The switch modules are mountable in either of two positions in individual readily accessible sockets in the relay and are actuated by a lever arrangement which acts as a stabilizer and stroke multiplier. The stroke multiplying action of the lever arrangement permits the magnet to have a small air gap and to operate with a reduced inrush current. The relay also includes a pair of plungers which are actuated by the levers and act as indicators and load balancers to prevent the switch modules from providing undesired overlapping contact functions.



3,835,426
WINDING CROWN FOR INLINE GUN DEFLECTION YOKE

Charles E. Torsch, Geneva, N.Y., assignor to GTE Sylvania Incorporated, Stamford, Conn.

Filed Oct. 24, 1973, Ser. No. 409,040
Int. Cl. H01f 7/00
U.S. Cl. 335—210 **5 Claims**



A toroidal deflection yoke for a color cathode ray tube comprises a hollow substantially frusto-conical core having a plurality of turns of wire toroidally wound thereabout to form a pair of horizontal deflection coils and a pair of vertical deflection coils. A front winding crown having a radial circumferential plurality of grooves for engaging the coil wires is also provided. The front crown has a plurality of voids within the coils. These predetermined voids are provided with projecting ears or tabs useful as engaging points while the coil is being wound. A similar but smaller rear winding crown is also provided at the opposite end of the core and it is also provided with a similar number of ears which are substantially coincident with the ears on the front crown.

3,835,427

SOLID-BORNE SOUND TRANSDUCERS

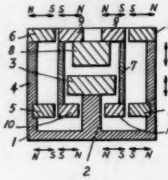
Elmar Breitbach, 10, Bornbreite, Gottingen, Germany

Filed Mar. 19, 1973, Ser. No. 342,429

Claims priority, application Germany, Mar. 20, 1972, 2213373

Int. Cl. H01f 7/00

U.S. Cl. 335—231 8 Claims



A solid-borne sound transducer for the precise measurement of vibrations consisting of a pot-shaped stator, a bell-shaped oscillator located coaxially within the stator and supported by a supporting magnet system mounted on the stator and the oscillator. At least two annular magnet systems, each consisting of two concentrically arranged annular magnets, are provided on the stator and the oscillator for centring and maintaining the oscillator within the stator without any mechanical or physical contact therebetween.

3,835,428

ELECTROMAGNETIC CHUCK DEVICE

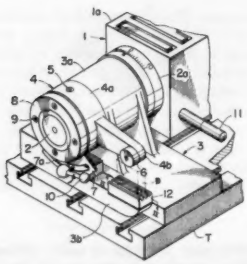
Isao Ito, Tokyo, Japan, assignor to Nissin Precision Machines Co., Ltd., Tokyo-to, Japan

Filed Oct. 9, 1973, Ser. No. 404,182

Claims priority, application Japan, Apr. 14, 1973, 48-44211

Int. Cl. H01f 7/02

U.S. Cl. 335—288 4 Claims



An electromagnetic chuck device comprising a flat surface for holding workpieces, a sine-bar, and an adjustable platform for carrying block-gauge, in order to precisely carry in the predetermined state workpieces to be subjected to machining operations. In this chuck device, a spindle portion of the magnetic chuck and the sine-bar being fitted to the spindle portion have a tapered profile to make coincident a rotating center of the magnetic chuck with that of the sine-bar upon assembly.

3,835,429

CURRENT TRANSFORMER

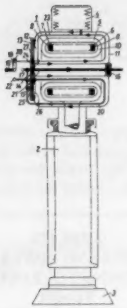
Wolfgang Hermstein, and Heinz Schiemann, both of Berlin, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Feb. 6, 1973, Ser. No. 329,978

Claims priority, application Germany, Feb. 7, 1972, 7204896

Int. Cl. H01f 40/06

U.S. Cl. 336—82 18 Claims



A current transformer switchable at the primary side and operable in an electrical system at high voltage and current for detecting currents in respective current ranges is disclosed. The current transformer includes a secondary system defining a window passage therethrough and having an iron core. A plurality of primary windings surround the core and the windings include respective conductors having respective cross-sections stepped down in magnitude one with respect to the other in correspondence to respective ones of the current ranges. A metallic enclosure surrounds the secondary system in the manner of a hollow ring and constitutes a turn of the primary windings. An elongated conductor member in the form of a compact, short rod extends through the window passage for detecting currents in an additional current range greater than the first-mentioned current ranges.

3,835,430

TUBULAR CORE ELECTRIC TRANSFORMER

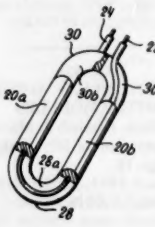
Laszlo Kocsis, Budapest, Hungary, assignor to Transelectro Magyar villamossagi Kulkereskedelmi Vallalat, Budapest, Hungary

Continuation of Ser. No. 37,467, May 18, 1970, abandoned, which is a continuation of Ser. No. 774,986, Nov. 12, 1968, abandoned. This application Apr. 5, 1972, Ser. No. 241,473

Claims priority, application Hungary, Sept. 20, 1968, KO 2192

Int. Cl. H01r 17/06

U.S. Cl. 336—83 4 Claims



An electric transformer has a tubular iron core and its primary is located within the tube which can serve for secondary.

In such case, the tubular iron core is short-circuited by a conductor connected to the tube extremities. The transformer may also have a secondary separate from the tubular iron core in which case the secondary has, preferably, likewise the form of a tube located within the tubular iron core and surrounding the primary. Both the primary and the secondary may consist of several turns. Such transformers are distinguished by exceptionally high values of power factor and efficiency, and are particularly suitable for heating, heat storing and energy shock absorbing purposes.

3,835,431
ELECTRICAL FUSE

Philip Rosen; John Feenan, both of Liverpool, England, and Kenneth Douglas Howton, Pallavaram, Madras, India, assignors to The English Electric Company Limited, London, England

Continuation-in-part of Ser. No. 74,429, Sept. 22, 1970, abandoned. This application Mar. 20, 1972, Ser. No. 236,018

Claims priority, application Great Britain, Sept. 23, 1969, 46794/69

Int. Cl. H01h *85/12*

U.S. Cl. 337—161 **10 Claims**

A multi-element high-voltage fuse comprises a plurality of similar fuse elements connected in parallel, each element being a strip of fusible material having a plurality of first portions of reduced cross-section spaced along its length and, between each mutually adjacent pair of said first portions, a plurality of shorter second portions of reduced cross-section. Under short-circuit conditions, substantially all the first and second portions of all the elements fuse simultaneously. Under low overload conditions, the elements fuse one at a time, at their longer first portions only, but the conditions are such that multiple arcing occurs, at substantially all these longer first portions, leading to safe fuse operation, at lower values of overcurrent than in conventional designs; and since the longer first portions are much less numerous than the shorter second portions they have relatively little effect on the overall resistance of the fuse and thus on its current carrying capacity. Conversely, fewer parallel elements are required to achieve a given minimum breaking current, since a lower current density per element suffices to produce multiple arcing. Thus, for a given minimum breaking current, the fuse may be more compact and robust than hitherto. In general, each element should contain about one of the longer second portions per kilovolt of the voltage rating of the fuse, for safe operation of the fuse under low overload conditions.

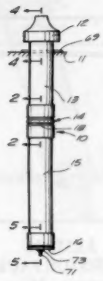
3,835,432
FUSE HOLDER

Vincenzo Caione, 265 Salita Tarsia, Naples, Italy

Filed Feb. 12, 1973, Ser. No. 331,420

Int. Cl. H01h *85/14*

U.S. Cl. 337—247 **10 Claims**



A fuse holder including first and second tubular members arranged in tandem, a cap engageable with the upper end of the first tubular member, a cylindrical electrical terminal and coupling threaded to the lower end of the first tubular member and to the upper end of the second tubular member, and a plug type electrical terminal which is threaded to and seals off the lower end of the second tubular member. When the cap is engaged with the first tubular member and O-ring seal between the cap and the first tubular member and O-ring seals adjacent to each of the threaded engagements provide a hermetically sealed fuse enclosure. The cap includes an axially extending elongated member having an elastic member secured to its end for engaging the hollow contact end of a fuse. Further, the cap includes a plurality of spaced apart teeth extending radially inwardly and the upper end of the first tubular member includes a plurality of spaced apart and radially extending beveled teeth. The cap teeth are engageable with the beveled surfaces on the teeth of the first tubular member such that rotation of the cap in one direction axially moves the cap to insure a tight locking engagement between the cap and tubular member. Thereafter, rotation of the cap in an opposite direction unlocks the cap so that it can be lifted away from the first tubular member. When the fuse is in the seated position, a toroidal spring connects one contact of the fuse to the tubular electrical terminal and a second toroidal spring connects the other contact of the fuse to the plug-type terminal.

3,835,433
CATALYTIC CONVERTER OVERHEATING PROTECTION

Rudolf Lamprecht, Russelsheim am Main, Germany, assignor to General Motors Corporation, Detroit, Mich.

Filed Sept. 4, 1973, Ser. No. 394,103

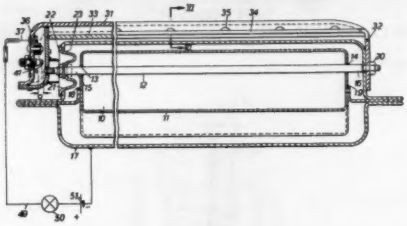
Claims priority, application Germany, Sept. 13, 1972, 336302

Int. Cl. H01h *37/48*

U.S. Cl. 337—382 **2 Claims**

A temperature-monitoring device in a catalytic converter for use in an exhaust gas decontamination system for an internal combustion engine (e.g. a motor vehicle internal combustion engine), for monitoring the catalyst used in the converter against overheating, by indicating the attainment of a predetermined temperature in the converter and/or automatically controlling a separate arrangement for controlling the supply of exhaust gas to the converter, comprises an elongated heat-expandable element supported within the converter, the expansion of said element caused by said predetermined rise

in temperature causing the operation of a switch means supported adjacent said element, said switch means, when



operated, actuating a warning indicator means and/or said separate arrangement.

3,835,434

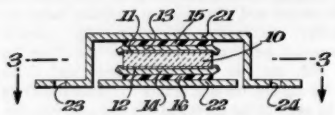
PTC RESISTOR PACKAGE

Manfred Kahn, Williamstown, Mass., assignor to Sprague Electric Company, North Adams, Mass.

Filed June 4, 1973, Ser. No. 366,931

Int. Cl. H01c *7/04*

U.S. Cl. 338—22 **10 Claims**



A PTC resistor body is metallized on two opposite and parallel surfaces. The body is sandwiched between two paddle-shaped metal plates making intimate electrical and thermal contact therewith. The handle-shaped portions of the plates extend radially from the package and serve as press-on-type terminals. This assembly is further sandwiched between broad thin layers of insulative material. This double sandwich structure is held in the recess of a hat-shaped metal bracket to which the top insulation layer is adhered. The bottom insulation layer adheres to a metal disc that is approximately flush with the brim portion of the metal bracket.

3,835,435

HEATING ELEMENT SUPPORT

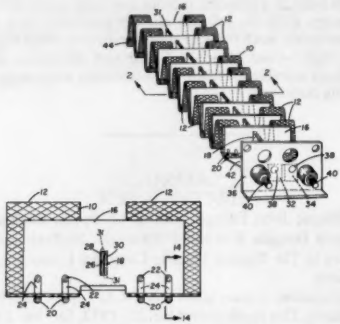
Jerry Eslie Seel, 595 Meadowbrook Dr., Adrian, Mich. 49221

Filed Dec. 18, 1972, Ser. No. 316,052

Int. Cl. H01c *3/00*; **H05b** *3/10*

U.S. Cl. 338—280 **19 Claims**

An electric heating element assembly for a moving air system in which the element is composed of a thin strip of apertured, foil-like material. According to the invention, the strip is formed with a series of continuous corrugations which establish a wavy pattern. The corrugated foil is immobilized and supported by a plurality of insulators which are connected to a support rod. The entire length of the resistance material between adjacent insulators is formed as a single, continuous, smoothly curved corrugation and the insulators maintain separation of those corrugations to prevent shorting or arcing. Various connecting arrangements are provided between the support rod and each insulator to prevent axial and rotational movement of each insulator relative to the support rod. The entire length of the resistance material between adjacent insulators is formed as a single, continuous, smoothly curved corrugation and the insulators maintain separation of those corrugations to prevent shorting or arcing. Various connecting arrangements are provided between the support rod and each insulator to prevent axial and rotational movement of each insulator relative to the support rod.



3,835,436

HIGH SPEED ELECTRICAL CONTACT DEVICE INCLUDING A ROTATING LIQUID CONTACT ELEMENT

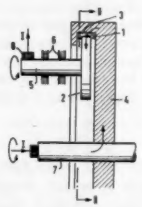
Peter Klaudy, Graz, Austria, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed May 22, 1973, Ser. No. 362,832

Claims priority, application Austria, May 23, 1972, 4433/72

Int. Cl. H01r *39/28*, *39/30*

U.S. Cl. 339—5 L **8 Claims**



An electrical contact device for high currents and high current pickup speeds comprises a ring-shaped rotating metallic contact element, with the inner circumference of which a roller-shaped contact element that is made of solid material and rotates about an axis, is in electrical contact. The speed on the circumference of the roller-shaped contact element fully or almost fully coincides with the speed on the inner circumference of the ring-shaped contact element. The ring-shaped contact element consists of an highly electrically conductive contact liquid which is held in an open groove by centrifugal force. The contact resistance and the friction losses of the contact device are very small.

3,835,437

GROUNDING PLUG

Albert J. Gartland, Jr., Trumbull; Vincent L. Carissimi, Fairfield, and George A. Riley, Bridgeport, all of Conn., assignors to Harvey Hubbell Incorporated, Bridgeport, Conn.

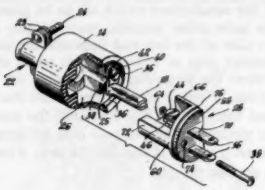
Filed June 14, 1972, Ser. No. 262,715

Int. Cl. H01r *3/06*

U.S. Cl. 339—14 P **10 Claims**

Apparatus for containing the blades of an electrical plug, especially where the plug includes a ground blade. A highly re-

liable ground is provided for the non-conducting metal structure of the plug by permanently connecting the ground blade thereto. The wiring terminal on the ground blade is externally



disposed on the plug to facilitate verification of the ground wire connection to the plug. To avoid the safety hazard otherwise presented thereby, the wiring terminals on the power blades are structurally enveloped within the plug.

3,835,438

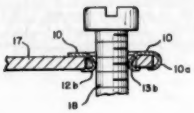
SELF-GROUNDING CLIP FOR THE MOUNTING STRAP OF AN ELECTRIC SWITCH OR RECEPTACLE

Edward Longworth, Jr., Fair Haven, Mass., assignor to John I. Paulding, Inc., New Bedford, Mass.

Filed June 29, 1972, Ser. No. 267,386

Int. Cl. H01r *3/06*

U.S. Cl. 339—14 R **3 Claims**



A self-grounding clip is provided for snapping into the screw slot of an electric switch- or receptacle-mounting strap and comprises a plate-like body portion having a central cut-out portion cut and bent about parallel fold lines to form two bent legs adapted to snap-fit into the screw slot, one end of the body being also bent out of the plane thereof arcuately about a fold line parallel to the fold lines of the central body legs and adapted to engage the end of the receptacle strap proximate the screw slot.

3,835,439

GROUNDED SURFACE DISTRIBUTION APPARATUS

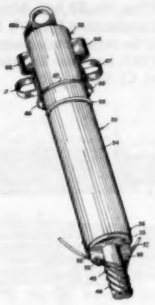
Edward H. Yonkers, Wilmette, Ill., assignor to Joslyn Mfg. and Supply Co., Chicago, Ill.

Continuation of Ser. No. 871,105, June 30, 1969, abandoned, which is a division of Ser. No. 660,748, Aug. 15, 1967, abandoned. This application Mar. 15, 1972, Ser. No. 234,864

Int. Cl. H01r *31/08*

U.S. Cl. 339—19 **13 Claims**

A grounded surface distribution apparatus and system is provided including elastomer encapsulated cable terminals, joints, taps, load-break switches, current limiting fuses and surge protectors, each enclosed completely within a metal sheath combined in various arrangements to perform operational functions required in loop and radial underground distribution systems. The cable terminals include a soft dielectric filler making a void-free interfacial engagement with the surface of a hard dielectric filler of a mating component. To provide for breaking a coupling under load, an arc-quenching follower is retractable into an axial cavity in the coupling components of the system and projectable therethrough upon breaking of the circuit and disconnecting of the components to provide an improved arc-quenching function. Thus, there is



provided an underground system having security, operational safety and convenience.

3,835,440

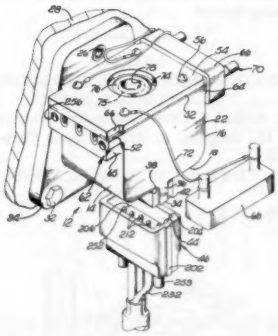
ELECTRICAL CONNECTOR ASSEMBLY FOR POWER DISTRIBUTION SYSTEM

Dennis E. Clarke, Van Nuys, Calif., assignor to Lockheed Aircraft Corporation, Burbank, Calif.

Filed Sept. 22, 1972, Ser. No. 292,482

Int. Cl. H01r *13/60*

U.S. Cl. 339—22 B **11 Claims**



An electrical connector having a housing member formed with a plurality of interior U-shaped channels. A bus member is positioned in each of the channels having a cross-section similar to that of the channels. A plural series of bores are formed through the housing, each defining spaced, electrical contact locations. Electrical contacts of each series are electrically connected at one end to one of the bus members and are positioned in some of the bore. The housing portion which contains the bores is formed with a connector shell extending therefrom, the outer surface of the shell having a polarization key or keyway formed thereon for interconnection with a mating electrical connector.

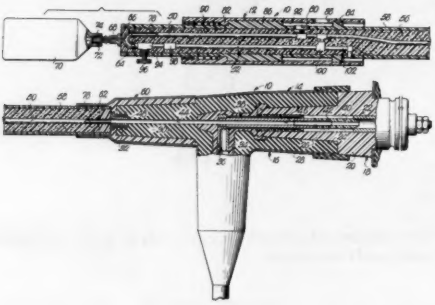
3,835,441
GAS OPERABLE ELECTRICAL CONNECTOR AND METHOD

Robert W. Harmon, Centralia, Mo., assignor to A. B. Chance Company, Centralia, Mo.

Continuation-in-part of Ser. No. 20,641, March 18, 1970, Pat. No. 3,649,952. This application Feb. 17, 1972, Ser. No. 227,155The portion of the term of this patent subsequent to Mar. 14, 1989, has been disclaimed.

Int. Cl. H01r *13/62*

U.S. Cl. 339—45 **22 Claims**



An electrical connector unit having a pair of complementally configured connector components which are adapted to be opened and closed by pressurized gas. A tubular member is coupled to one of the components which has a gas-conveying passage therein for introducing pressurized, arc-suppressing gas into the interior of the connector. Means within the member selectively direct the gas at high pressure through the one component and against the other component to shift the two components away from each other and open the connector, and selectively directs the gas at a low pressure offering minimal resistance to closing movement of the components during closing thereof.

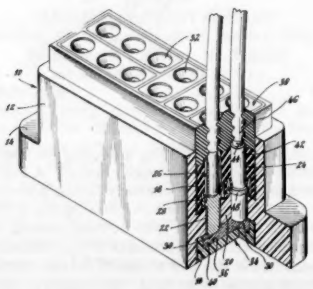
3,835,442
TERMINATION MODULE UTILIZING CONDUCTIVE ELASTOMER BUSSING

Norman R. Anderson, Cicero, and Joseph Janatka, La Grange, both of Ill., assignors to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Feb. 1, 1973, Ser. No. 328,705

Int. Cl. H01r *11/02*

U.S. Cl. 339—59 R **6 Claims**



This invention relates to a termination module for selectively interconnecting a plurality of electrical conductors. The conductors to be connected are attached to pin contacts mounted in a housing, the pin contacts having a contacting surface at one end. A bus pad of a conductive elastomer material is supported in intimate physical and electrical connection with the contacting surfaces of the contact pins for at least two of the conductors which are to be joined. A bus bar of copper or some other metallic material may be supported adjacent the side of the bus pad opposite the side in contact with the contact pins to shunt at least some of the current flowing between the pins, thereby reducing the resistance of the termination. Where a requirement exists that a circuit not be completed through the bus pad until the contact pins are substantially mounted, the bus pad may be formed of a conductive elastomer which is conductive only when a compressive force is applied thereto.

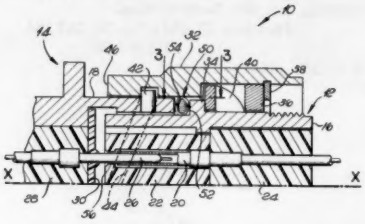
3,835,443
ELECTRICAL CONNECTOR SHIELD

Bruce K. Arnold, El Toro, and John T. Keith, Los Angeles, both of Calif., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Apr. 25, 1973, Ser. No. 354,330

Int. Cl. H01r *13/54*

U.S. Cl. 339—90 R **3 Claims**



A radio frequency and electromagnetic interference shield for an electrical connector comprising a helically coiled conductive spring which is interposed between facing surfaces on the mating halves of the connector. The spring is coiled in such a manner that the convolutions thereof are slanted at an oblique angle to the center axis of the connector members. The axial distance between said facing surfaces when the connector members are mated is less than the normal outside helical diameter of the convolutions of the spring. Thus, mating of the connector members axially flattens the spring to form an almost continuous metal shield between the connector members.

3,835,444
SLOTTED PLATE CONNECTOR

Roberto Plana, and Francisco Villazon, both of Barcelona, Spain, assignors to AMP Incorporated, Harrisburg, Pa.

Filed Apr. 5, 1973, Ser. No. 348,388

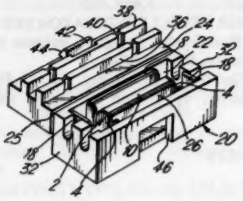
Claims priority, application Spain, Apr. 8, 1972, 179,115/72; Apr. 8, 1972, 179,116/72

Int. Cl. H01r *9/06*

U.S. Cl. 339—98 **4 Claims**

An electrical connector for electrically connecting the electrically conductive cores of insulated wire, the connector comprising an insulating housing having a base and side walls defining an aperture for providing access to the interior of the housing, a lid movable to a closed position to cover the aperture a lead out opening for each wire, and first and second metal plates supported in the housing in spaced opposed relationship, with an edge of each plate facing away from the base, a plurality of slots opening into such edge, each slot of each plate being aligned with a slot of the other plate and being

capable of receiving an insulated wire forced into the slot by the lid as it is moved to its closed position, so that the edges of the slot pierce the insulation of the wire to make electrically conductive contact with the core of the wire, there being providing a wire severing edge associated with one slot, only,



of each pair of aligned slots and disposed on the side of the slot remote from the other slot of the aligned pair, each wire severing edge being positioned for cooperation with the lid to trim a wire received in the associated slot as the wire is forced into the slot by the lid.

The invention includes a contact for the connector.

3,835,445

ELECTRICAL CONNECTING DEVICES FOR TERMINATING CORDS AND METHODS OF ASSEMBLING THE DEVICES TO CORDS

Edwin C. Hardesty, Perry Hall, Md., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed Dec. 4, 1972, Ser. No. 311,575
Int. Cl. H01r *9/08, 13/58*
U.S. Cl. 339—99 R **13 Claims**

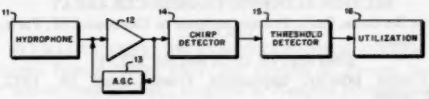
A one piece plug for terminating a cord to connect electrically the cord to components in a telephone apparatus is constructed with features advantageous to the assembly of the cord with the plug. The plug has a base molded with a cover hinged integrally to one end of the base and in an open position. This avoids the alignment of the cover with the base during assembly with the cord. Also, the base is formed with a cord-input aperture in the one end and which advantageously circumscribes substantially the cord periphery to maintain the cord within the plug during assembly operations. A leading portion of the cord is inserted into the aperture and extended past the other end of the plug. The jacket is removed from the leading portion to expose individually insulated conductors. Then the cord is retracted and the conductors fanned out into associated troughs having the same spacing as the components. The cover is closed and bonded to the base to confine the conductors and prevent unintended lateral and longitudinal movement. Flat terminals are inserted into the base to move internal contacting portions thereof into engagement with the conductors. External contacting portions of the terminals engage associated components of the telephone apparatus when the plug is inserted thereinto.

3,835,446

CHIRP SIGNAL APPARATUS

Richard Rowlands, State College, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 25, 1966, Ser. No. 597,835
Int. Cl. G01s *7/52*
U.S. Cl. 340—3 R **12 Claims**



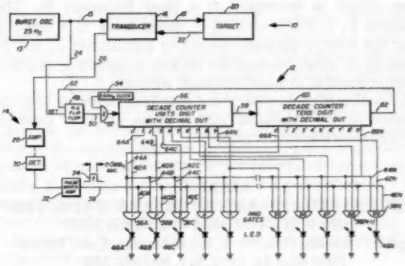
The apparatus disclosed herein includes a hydrophone for sensing underwater sonar signals, a gain controlled amplifier receiving the hydrophone output, and a chirp signal detector for detecting chirp signals having an instaneous frequency which increases with time. The chirp detector is further described as including a specially clamped reed which is electromagnetically driven into vibration having an instantaneous frequency equivalent to that of the sensed chirp signal and having an instantaneous peak amplitude corresponding to a characteristic nonlinear frequency vibration amplitude response. The apparatus disclosed further includes threshold detector means responsive to reed vibration amplitude for indicating the reception of the chirp signal to utilization apparatus.

3,835,447

LIGHT EMITTING DIODE READOUT

Darrell J. Lowrance, Tulsa, Okla., assignor to Lowrance Electronics, Inc., Tulsa, Okla.

Filed Mar. 19, 1973, Ser. No. 342,378
Int. Cl. G01s *9/68*
U.S. Cl. 340—3 R **8 Claims**



This disclosure describes a readout or output display for a sonar system which uses a plurality of low power, voltage-sensitive lights, such as light emitting diodes, arranged in sequential order along a line or other geometrical arrangement. A first oscillator controls the pulsing of the underwater ultrasonic transducer means. Each pulse of the first source of pulses also starts a counter, which is controlled by a clock, providing third pulses, which are of a period small compared to the period of the first pulses. On the count of 100 the counter resets to zero. The transducer means receives a reflection of the pulse of ultrasonic energy and converts it to electrical signals. These signals are processed and shaped to form a series of second pulses which mark the times of reception of the reflected pulses. A plurality of gate means are connected to said plurality of lights. Each of the gates are controlled by said second pulses and the pulse outputs of the counter, in such a manner that each of the gates sequentially has a voltage

pulse applied from the counter and the particular gate which has such voltage applied to its input, at the same time that the reflection pulse is received, will be lighted. The position of this light will then be a measure of the time interval between the outgoing ultrasonic pulse and the reflected pulse, and therefore a measure of the depth of the reflecting medium.

3,835,448

MULTIBEAM STEERING SYSTEM FOR A CIRCULAR SECTION ACOUSTIC TRANSDUCER ARRAY

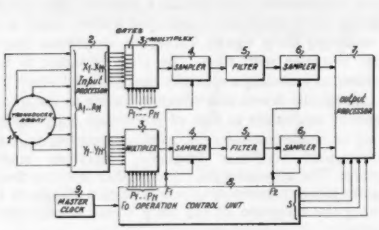
Jean Bertheas, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Apr. 19, 1973, Ser. No. 352,717

Claims priority, application France, May 10, 1972, 72.16758

Int. Cl. G01s *3/80, 7/52*

U.S. Cl. 340—6 R **5 Claims**



A system for the accurate multibeam steering, prior to the beams forming by electronic means, of a circular-section acoustic transducer array.

The electric signals derived from transducers aranged in columns are processed and multiplexed in time-division fashion using an electronic switch, then sampled at a variable frequency F_1 before being applied to an interpolation filter whose output is resampled at a fixed frequency F_2. The frequency F_1 is made variable in dependance of a setpoint value; the interval between these two frequencies F_1 and F_2 producing an offset between the instants of sampling, and thus making it possible to modify to beam steering.

The system is applicable to the multibeam steering and stabilisation in the azimuthal plane, of an acoustic transmit and/or receive transducer array.

3,835,449

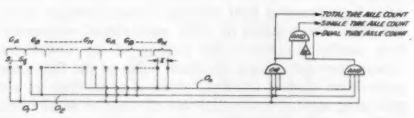
METHOD AND APPARATUS FOR CLASSIFYING THE TIRE WIDTH OF MOVING VEHICLES

Joseph R. Viracola, P.O. Box 2, Santa Monica, Calif. 90406

Filed May 24, 1972, Ser. No. 256,568

Int. Cl. G08g *1/015, 1/02*

U.S. Cl. 340—38 R **15 Claims**



The method of arranging a row of tire sensing devices across about half a traffic lane, arranging the devices into groups whose length is no greater than the difference in width between the narrowest dual tire to be detected as such and the widest single tire to be detected as such, arranging the groups into a series of blocks each containing N groups producing a first output indicating that a tire has passed whenever a tire encounters any one of the sensing devices, and producing a sound output indicating that the passing tire is a dual tire whenever the tire has encountered a sensing device in each one of a first, second, and Nth group of devices.

3,835,450

MOTOR VEHICLE INDICATOR SYSTEMS

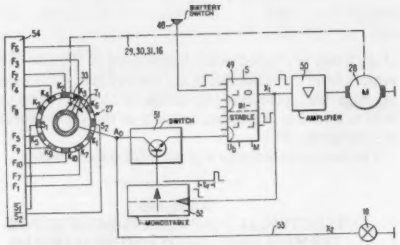
Lothar Reck, Russelsheim, Germany, assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 19, 1972, Ser. No. 316,581

Claims priority, application Germany, Dec. 29, 1971, 2165213

Int. Cl. G08b *19/00*

U.S. Cl. 340—52 F **4 Claims**



A system for indicating operating conditions in motor vehicles comprises a warning device energised by a power source and electrically connected to the corresponding switches or measuring instruments for the respective vehicle mechanisms, any failure in one or more of the vehicle mechanisms to be monitored being indicated by a single stationary warning lamp arranged on the instrument panel in the field of vision of the driver, the lamp illuminating in each instance one field on a scale which is divided into several fault indicating fields and is arranged on a rotatable drum movable by a motor relative to the warning lamp and so controlled, that one field indicating the respective fault is illuminated by the warning lamp; in the event of a failure in more than one of the vehicle mechanisms provision is made to move the scale after a delay period to illuminate another fault indicating field of the scale.

3,835,451

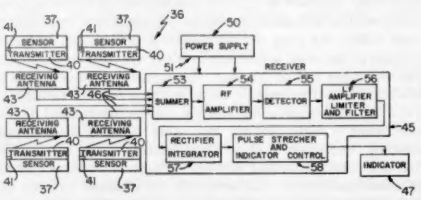
PULSE STRETCHER FOR A RECEIVER OF A PNEUMATIC TIRE LOW PRESSURE MONITORING AND WARNING SYSTEM

Donald E. Church, Richmond, Ind., assignor to Tyrechek, Inc,, Houston, Tex.

Filed Sept. 15, 1972, Ser. No. 289,540

Int. Cl. B60c *23/04*

U.S. Cl. 340—58 **10 Claims**



An electrical apparatus provides a reliable indication which is readily identifiable once a plurality of useable electrical

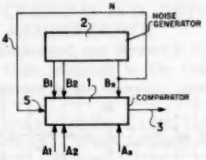
signals are supplied thereto as a result of a low pressure condition in a pneumatic tire of an associated vehicle. The apparatus employs an electrical device which increases the effective time duration of a useable signal and an indicator which provides the indication during the increased time duration of the useable signal and such indicator operates to automatically cease to provide an indication after a time period to thereby define the identifiable indication by a repeated activation of the indicator.

3,835,452

CODING SYSTEM FOR STOCHASTIC REPRESENTATION

Jean Zirphile, Grenoble, France, assignor to Societe Generale de Constructions Electriques et Mecaniques (Alsthom), Paris, France

Filed Feb. 21, 1973, Ser. No. 334,403
Claims priority, application France, Feb. 21, 1972, 72.5826
Int. Cl. G06f 7/02
U.S. Cl. 340—146.2 **4 Claims**



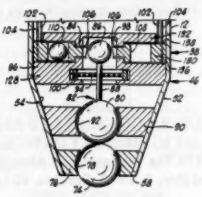
The invention concerns the coding of a data item given in digital form, in a bifilar stochastic representation. It is characterized in that a comparator receives the bits of a digital noise and the data bits, other than the sign bit, of a digital data item to be coded, and supplies an output signal transmitted to one of the wires of a bifilar stochastic representation, possibly by means of elements in a simple combination of that signal and of the sign bit of the digital data item to be coded. The invention applies more particularly to operator elements in stochastic representation.

3,835,453

CODE GENERATING AND RECEIVING APPARATUS

Sarukkai R. Narayanan, 2905 N. Stiles, Apt. D-405, Oklahoma City, Okla. 73105

Filed June 1, 1972, Ser. No. 258,791
Int. Cl. G06k 9/16
U.S. Cl. 340—146.3 SY **24 Claims**



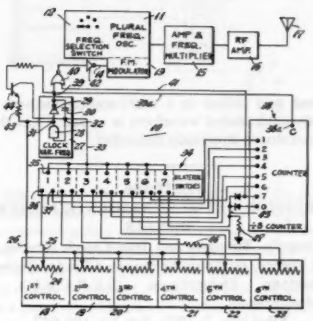
An improved code generating and receiving apparatus having a writing instrument marking indicia on a writing surface in a code generating position and generating indicia indicating signals in response to indicia being marked on the writing surface, the indicia indicating signals being indicative of the marked indicia and a predetermined number of the generated indicia indicating signals comprising the indicia code, and a receiving apparatus receiving, identifying and deciphering the received indicia code, the receiving apparatus generating and transmitting feedback signals to be received by the writing instrument for providing operator-perceivable feedback, in one form. In one aspect, the invention also includes apparatus generating an orientation signal responsive to the orientation of the writing instrument and establishing a movable reference point for identifying the sequence of the indicia indicating signals and generating an indicia code substantially independent of the orientation of the writing instrument.

3,835,454

PLURAL CHANNEL FM REMOTE CONTROL SYSTEM

Joseph Palmieri, Deep River, and Douglas M. French, New Haven, both of Conn., assignors to Westport International, Inc., Milford, Conn.

Filed Oct. 10, 1972, Ser. No. 296,268
Int. Cl. H04b 1/00
U.S. Cl. 340—171 R **8 Claims**



A system for individually adjusting a plurality of remotely located servo units according to the adjustment of a manual control for each unit by transmitting an FM carrier signal that is broken into a plurality of segments with each segment including a portion having a low frequency and another portion of a high frequency with the duration of each segment being related to the setting of its manual control. An FM receiver decodes the wave to produce an electrical pulse related to the duration of each segment with the associated servo unit assuming a position that is related to the pulse duration. The transmitter is capable of selecting any one of a plurality of different carrier frequencies and if each device receives only one of the carrier frequencies, the transmitting may select the device to be controlled.

ERRATUM

For Class 340—172 see:
Patent No. 3,835,312

3,835,455

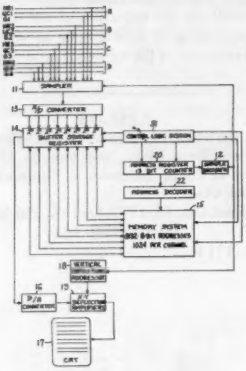
SYSTEM FOR SIMULTANEOUSLY DISPLAYING REPRESENTATION OF A PLURALITY OF WAVEFORMS IN TIME OCCURRING RELATION

Thomas J. Abbenante, Branford, Conn., assignor to Corometrics Medical Systems, Inc., Wallingford, Conn.

Continuation of Ser. No. 848,652, Aug. 8, 1969, abandoned.
This application Aug. 20, 1971, Ser. No. 173,686
Int. Cl. G06f 3/14
U.S. Cl. 340—172.5 **14 Claims**

This disclosure relates to a system for monitoring and storing the amplitude of a plurality of simultaneously occurring

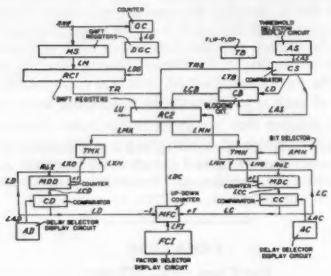
waveforms and simultaneously displaying the history of the waveforms over a predetermined interval of time. The amplitudes of the waveforms are sampled at closely spaced intervals of time and stored in a multi-station memory system. Periodically each stored waveform is updated and the oldest sampled and stored amplitude discarded.



3,835,456
COMPRESSION OF THE DYNAMICS OF NUMERICAL SIGNALS

Philippe Angelle, Thouare, and Jean-Claude Naudot, Nantes, both of France, assignors to Societe d'Etude, Recherches et Constructions Electroniques (S.E.R.C.E.L.), Nantes Carquefou, France

Filed Nov. 5, 1971, Ser. No. 196,047
Claims priority, application France, Nov. 6, 1970, 70.40038
Int. Cl. G01v 1/00; G06f 1/00
U.S. Cl. 340—172.5 **12 Claims**

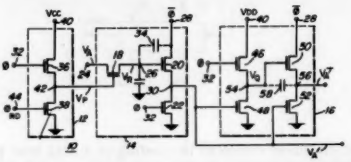


A method and apparatus for reducing the relationship between the maximum and minimum values of amplitude of an analogue or digital signal expressed in fixed point. The method may include displaying an initial value of a factor of compression corresponding to a number of shifts of the point, shifting the point in correspondence with the factor of compression to supply a modified signal, detecting the overflow of a maximum or minimum value by the modified signal, blocking the overflow information for a time corresponding to the maximum or minimum overshoot delay, and modifying the number of shifts of the point in accordance with the detected overflow. The apparatus may include a shift register for receiving a digital signal in fixed point and shifting the signal in correspondence with a factor of compression, a first test circuit which is excited when at least one of a first number of higher orders of notation of the shift register has a logical state other than zero, a second test circuit which is excited when none of a second number of higher orders of notation of the shift register has a logical state other than zero, at least one delay store for producing an output in response to successive excitations of one of the test circuits within a particular delay, another store responsive to the output of the delay store for increasing or decreasing the signal in the shift register depending upon whether the signal is greater than a maximum value or smaller than a minimum value.

3,835,457
DYNAMIC MOS TTL COMPATIBLE

Robert Tapei Yu, Tempe, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Dec. 7, 1972, Ser. No. 312,999
Int. Cl. G11c 11/40
U.S. Cl. 340—173 R **10 Claims**



The dynamic MOS TTL compatible input voltage level translator has an input terminal for receiving a TTL voltage level for transmission to the gate of a load MOSFET through a transmission gate MOSFET. The gate of the transmission gate MOSFET is connected to a switching bias circuit which turns on the transmission gate MOSFET to transmit the TTL input voltage, and turns off the MOSFET to maintain a voltage comprising the TTL voltage plus a bootstrap voltage at the gate of the load MOSFET. The bootstrap voltage is added through the use of an enhancement capacitor which is connected between the gate and the drain of the MOSFET load device, the drain also being connected to an input for receiving a clock complement signal. A switch MOSFET device has its gate connected through a terminal for receiving a clock signal and has its drain connected at a junction to the source of the load MOSFET device, the junction providing an output signal of a MOS amplitude voltage for application to succeeding MOS stages.

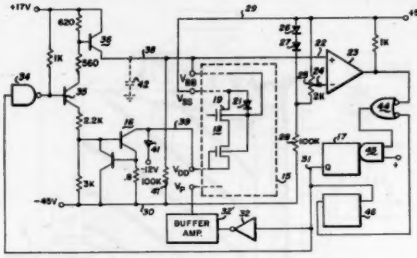
3,835,458
DIE TEMPERATURE CONTROLLED PROGRAMMING OF IC MEMORY DEVICE

Dale Mrazek, 27876 Via Ventana, Los Altos Hills, Calif. 94022

Filed Dec. 3, 1973, Ser. No. 421,411
Int. Cl. G11c 7/04
U.S. Cl. 340—173 R **10 Claims**

The programming pulse rate of an integrated circuit memory array such as a voltage stressed programmable read only memory is controlled by sensing the temperature of the IC die. The memory device is rapidly pulsed until a preselected safe ceiling temperature is reached, and thereafter the rate of application of the pulses is controlled to maintain the temperature of the die at or near the safe ceiling temperature. The temperature of the die is sensed by measuring the voltage drop across a diode within the IC circuit, this voltage

drop being a function of the temperature of the die, and the rate of pulsing of an oscillator, and thus the rate of application



of the programming power pulses, is controlled in accordance with the diode voltage.

3,835,459

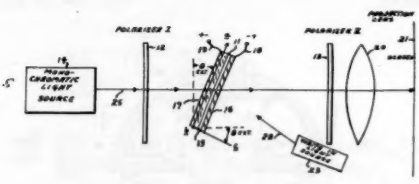
BIREFRINGENCE READ BI TI O DISPLAY AND MEMORY DEVICE

Theodore E. Luke, Englewood, and Stewart E. Cummins, New Carlisle, both of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Division of Ser. No. 232,173, March 6, 1972. This application Apr. 18, 1973, Ser. No. 352,388

Int. Cl. G11c *11/22, 11/42*

U.S. Cl. 340—173.2 **4 Claims**



Information to be stored is written into a single crystal of bismuth titanate, by either direct electrodes, photoconductors, or electron beams. Storage is by oppositely switched domains in the poled bismuth titanate crystal. The crystal is positioned between crossed polarizers, positioned 45° from extinction, and rotated about the *b* axis such that an OFF state by thickness extinction occurs for one of the domains; the opposite domain then being in an ON state. Readout in one embodiment is by monochromatic light. In another embodiment a second bismuth titanate crystal is positioned adjacent the storage crystal and oriented such that its *b* axis is perpendicular to the *b* axis of the first crystal to provide a storage system that is read out with white light. In this second embodiment the second crystal makes the total retardation through it and through one domain of the storage crystal zero which gives no transmission of light, that is, an OFF state; the other domain providing an ON state.

3,835,460

ROTARY FIELD SWITCH MEANS FOR MACHINE APPARATUS

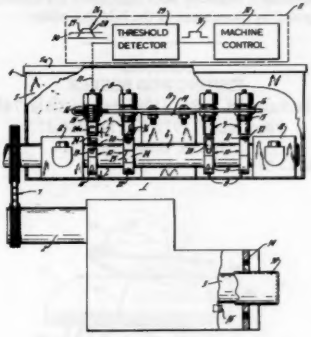
Louis J. Handziak, Milwaukee, Wis., assignor to Joseph Schlitz Brewing Company, Milwaukee, Wis.

Filed Dec. 4, 1972, Ser. No. 311,763

Int. Cl. G08b *21/00*

U.S. Cl. 340—271 **6 Claims**

A switch operating collar encircles a shaft and includes two semi-cylindrical metal members interconnected with abutting end faces by suitable set screws for releasably clamping the collar to the shaft. A circumferentially extended slot or keyway is machined or otherwise formed in the outer peripheral surface of the one member. The side edges of the slot are formed along a chordal line to define relatively sharp discontinuities in the face or periphery of the collar. The collar screws are accessible from the semi-circular member containing the slot. Shaft bearings firmly support the signal drive shaft and clamped collar unit, or units, for rotation about a predetermined axis. A metal proximity sensor head is



mounted aligned with the peripheral surface of the collar. The circumferential extent of the slot is slightly larger than the operative corresponding dimension of the sensor head. The axial width of the collar unit is slightly less than the sensor head such that the screw holes do not generate operative output signals. Each movement of the slot past the sensing head generates a pulse signal having an inclined leading and trailing edge. A threshold detector responds at a selected level to produce a square wave output signal for providing digital logic signals.

3,835,461

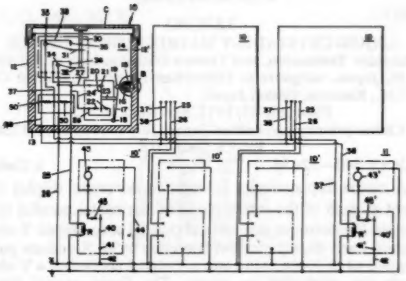
TAMPERPROOF ALARM SWITCH

James E. Nelson, 304 Harvard Ave., Wenonah, N.J. 80090

Filed June 18, 1963, Ser. No. 289,783

Int. Cl. G08b *13/08*

U.S. Cl. 340—274 **1 Claim**



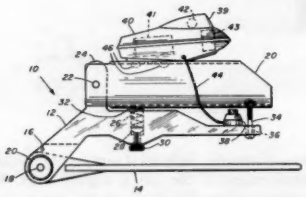
1. An alarm system for a normally closed security room having a movable room closure providing access thereto, which comprises,

a. a normally closed housing within the security room having a movable housing cover providing access thereto,

b. a first switch in the housing, a first remote indicator and electrical connections therebetween,

c. a second switch in the housing, a second remote indicator and electrical connections therebetween,
d. said first switch having a contact arm which is operable by movement of the room closure to independently energize the first indicator,
e. said second switch having a contact arm connected to the housing cover and operable by movement of the housing cover to energize the second indicator,
f. a third switch in the housing having a contact arm connected to the housing cover and
g. said third switch being electrically connected with the first indicator whereby both indicators are simultaneously energized by movement of the housing cover.

3,835,462
FISHING ROD BEEPER
Rubie E. Periman, Rt. 1, Box 1129, Owasso, Okla. 74055
Filed June 7, 1972, Ser. No. 260,377
Int. Cl. G08b *21/00*
U.S. Cl. 340—279 **1 Claim**

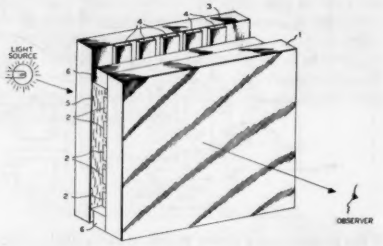


A type of signaling device for use with a fishing pole and line, sounds a signal whenever there is a catch on the hook, which provides a pull on the fishing cord or on the fishing pole. In one embodiment a two-piece hinged frame is provided which can be forced into the ground as a standard. There is a tubular receptacle into which the fishing pole can be inserted. This receptacle is hinged to the frame and is opposed by an adjustable spring means. There is a push button mounted on the frame against which the receptacle can be pressed, against the force of the spring. This push button connects to a battery and signal means which can be a small light or horn. When the fishing pole is inserted in the socket and there is a pull on the fishing line, the receptacle will be rotated against the force of the spring and close the push button to sound the signal.

3,835,463
LIQUID CRYSTAL X–Y MATRIX DISPLAY DEVICE
Masahide Tsukamoto, and Tetsuro Ohtsuka, both of Takatsuki, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Osaka, Japan
Filed July 27, 1972, Ser. No. 275,742
Claims priority, application Japan, July 29, 1971, 46-57384
Int. Cl. G02f *1/18*
U.S. Cl. 340—324 M **6 Claims**

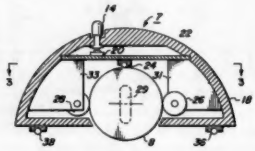
A matrix display device having a liquid crystal display element at each of the intersections of horizontal parallel strip shaped X-electrodes and vertical parallel strip shaped Y-electrodes. Each display element is excited by an X-address pulse applied to an X-electrode and a Y-signal applied to a Y-electrode for producing an image. The liquid crystal has a threshold voltage in a.c. operation above which the liquid crystal exhibits a change in transparency.

The X-address pulse is a gated a.c. voltage of frequency f, phase ϕ_1, time interval T_1, amplitude 2V and average level Vav. The Y-signal is an a.c. voltage of frequency f, amplitude V, average level Vav and phase ϕ_1 which is switched to a different phase ϕ_2 during a time interval T_2. The amplitude V is equal to or less than the threshold voltage and more than one-third of the threshold voltage. The time interval T_2 is controlled by an image signal synchronized with the X-address



pulse so that each display element has the transparency changed for producing an image.

3,835,464
POSITION INDICATOR FOR A DISPLAY SYSTEM
Ronald E. Rider, Menlo Park, Calif., assignor to Xerox Corporation, Stamford, Conn.
Filed Jan. 11, 1973, Ser. No. 322,810
Int. Cl. G06f *3/14*
U.S. Cl. 340—324 A **14 Claims**

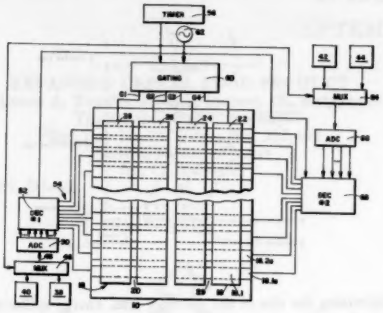


The invention relates to a position indicator which rides over a surface for controlling a cursor over a visual display. The indicator generates signals indicative of its positions to cause the cursor to be displayed on the display at a corresponding position. The indicator includes a control mechanism that comprises a transport sphere in combination with position wheels indicative of Cartesian coordinates. The sphere is in contact with the surface over which the indicator rides and the position wheels contact the sphere at a position on the sphere approximately 90° from the contact loci of the sphere and the surface.

3,835,465
LIQUID CRYSTAL BAR GRAPH DISPLAY
Lawrence E. Tannas, Jr., Orange, and John V. Hobbs, Camarillo, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.
Filed Feb. 28, 1973, Ser. No. 337,259
Int. Cl. G08b *5/36*
U.S. Cl. 340—324 R **7 Claims**

An analog display in the form of a plurality of bar graphs is provided by an arrangement of horizontally extending graphic electrode strips cooperating with vertically disposed and mutually discrete common electrode strips and a film of liquid crystal material confined between the electrodes. Selected groups of the horizontal graphic electrode strips are energized

in accordance with the magnitude of a bidirectionally varying signal, and a selected one or more of the common electrodes



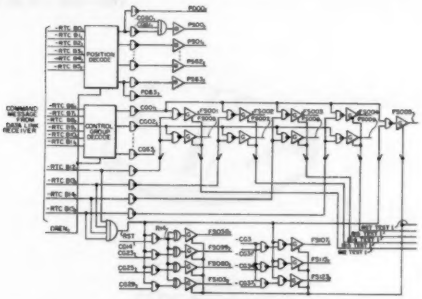
are concurrently energized to selectively display the several bar graphs in a time shared arrangement.

3,835,466

CONTROL OF OPERATOR POSITION DISPLAY

Edward S. Bieszczad, Hoffman Estates; William R. Wedmore, Glen Ellyn, and John S. Young, Addison, all of Ill., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Sept. 14, 1973, Ser. No. 397,570
Int. Cl. G08b *5/36*
U.S. Cl. 340—334 **5 Claims**



A display buffer for controlling lighting of lamps and other functions at a plurality of operator positions. There is an arrangement of relay drivers and relays into what are effectively matrix circuits, with current sensors connected to relay driver ground switches using a common resistor for each bit of status codes (including reset), so that current for only one relay should flow through each resistor. The arrangement includes logic associated with the current sensors to monitor the operation and detect failures.

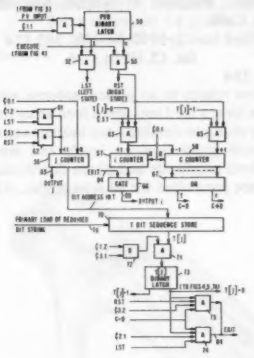
3,835,467

MINIMAL REDUNDANCY DECODING METHOD AND MEANS

Luther Jay Woodrum, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 10, 1972, Ser. No. 305,631
Int. Cl. H04l *3/00*
U.S. Cl. 340—347 DD **2 Claims**

Electronically decoding variable length minimal redundancy binary input codes into characters in a character set. Code flexibility is provided by easily supporting (1) different transmitted codes for the same outputted character set, and (2) the same transmitted code for different output character sets. Tree structured codes are used for translating minimal redundancy codes into characters, which are well-known in the prior art of Huffman codes, in which the sink vertices in a binary tree correspond to characters in a character set. The set of path vectors in the binary tree is the minimal redundancy encoding for the characters represented by the sinks. A bit



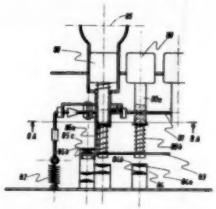
sequence store T has its bit positions set to represent the binary tree, in which the bit positions are set to correspond to the vertices in the tree when it is scanned in left list order; and a 1 setting represents an inner vertex and a 0 setting represents a sink vertex in the binary tree. Store T is easily reset to permit easy changes in the binary tree represented therein, in order to support (1) and (2) above. The path vectors in the tree are transmitted as the coded characters are decoded using the correct tree set into store T.

3,835,468

RATIONAL ALPHABETIC SYSTEM

Antonio Monteiro Alves dos Santos, Rua Fernao Alvares do Oriente, No. 4, 2nd, Drto. Bairro des S. Miguel, Lisbon, Portugal

Continuation-in-part of Ser. No. 788,246, Dec. 31, 1968, abandoned. This application June 29, 1972, Ser. No. 267,579
Claims priority, application Portugal, Jan. 2, 1968, 48892
Int. Cl. H01h *13/72*
U.S. Cl. 340—365 R **1 Claim**



Apparatus having a plurality of elements disposed relative to each other or movable to different positions relative to each other in which the positions correspond to information and that information may be read-out in matrix form or as characters and forms of writing according to the invention. The apparatus are manipulatable by movable parts of the bodies of

handicapped operators for control of other apparatus. Apparatus for communicating with the blind provide outputs according to a communication system of symbols and characters and writing and reading apparatus for the blind operate within the communication system.

3,835,469

OPTICAL LIMITED SCAN ANTENNA SYSTEM

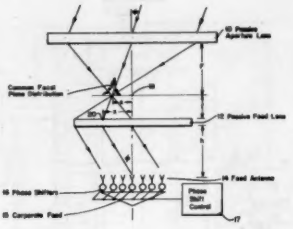
Chao C. Chen, Cerritos, and Edward C. Du Fort, Fullerton, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Nov. 2, 1972, Ser. No. 303,174

Int. Cl. H01q *3/26*

U.S. Cl. 343—754 **7 Claims**

This invention relates to an optical antenna system including an aperture lens, a feed lens and a feed array for scanning a pencil beam or multiple simultaneous beams over a limited angular sector with good sidelobe levels and minimum gain degradation. Both amplitude and phase distributions over the aperture lens are controlled for all scan angles. Also, the feed lens may be positioned in a manner such that virtually the entire aperture lens is illuminated for all scan angles thereby minimizing the size of the aperture lens, energy spillover and rate of gain decrease with angle from boresight.



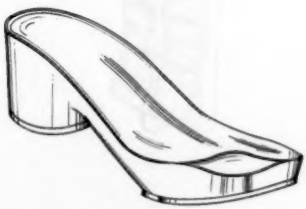
DESIGNS

SEPTEMBER 10, 1974

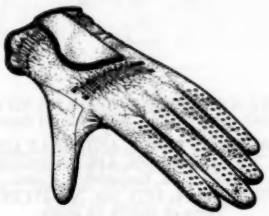
232,667
EXPANDED CEREAL FOOD PRODUCT
Stylianos A. Topalis, Mount Prospect, Ill., assignor to The Quaker Oats Company
Filed Jan. 10, 1973, Ser. No. 322,408
Term of patent 14 years
Int. Cl. D1—*01*
U.S. Cl. D1—1

232,668
HAT
John C. De Monbrun, 309 N. Reese Place, Burbank, Calif. 91506
Filed Mar. 7, 1973, Ser. No. 338,738
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—257

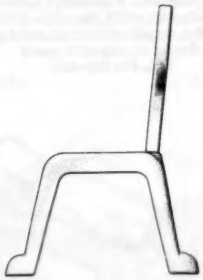
232,669
CLOG SHOE SOLE
Joseph P. Famolare, Jr., Florence, Italy, assignor to Famolare, Inc., New York, N.Y.
Filed Dec. 15, 1972, Ser. No. 315,609
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—322



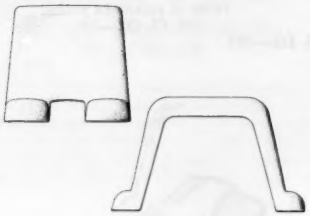
232,670
GOLF GLOVE
James M. Long, South Hadley, Mass., assignor to Questor Corporation, Toledo, Ohio
Filed May 21, 1973, Ser. No. 362,162
Term of patent 14 years
Int. Cl. D2—*06*
U.S. Cl. D2—361



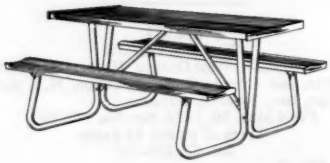
232,671
CHILD'S CHAIR
Jerrold J. Krumholz, West Orange, Herbert H. V. Reisgen, Westfield, and George C. Kress, Union, N.J., assignors to Kusan, Inc., Nashville, Tenn.
Filed Mar. 30, 1973, Ser. No. 346,663
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—7



232,672
CHILD'S BENCH
Jerrold J. Krumholz, West Orange, Herbert H. V. Reisgen, Westfield, and George C. Kress, Union, N.J., assignors to Kusan, Inc., Nashville, Tenn.
Filed Mar. 30, 1973, Ser. No. 346,664
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—7



232,673
COMBINED TABLE AND SEAT UNIT
Charles P. Taylor, Magnolia, Ark., assignor to Howmet Corporation, Greenwich, Conn.
Filed July 14, 1972, Ser. No. 271,891
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—45

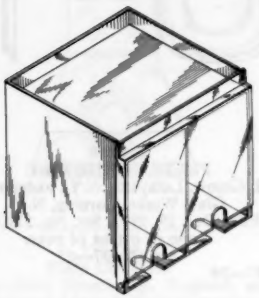


232,674
SNOWMOBILE SEAT
Thomas Scott, Valcourt, Quebec, Canada, assignor to Bombardier Limited, Valcourt, Quebec, Canada
Filed May 10, 1972, Ser. No. 252,155
Claims priority, application Canada Apr. 5, 1972
Term of patent 7 years
Int. Cl. D6—*01*
U.S. Cl. D6—48.1

232,675
CHAIR
Alex Strassle, Kirchberg, Switzerland, assignor to Intercollection Development S.A., Kirchberg, Switzerland
Filed Jan. 26, 1973, Ser. No. 326,750
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—56

232,676
PAN BOARD
Samuel G. Oliver, P.O. Box 14, La Plata, Md. 20646
Filed Feb. 28, 1973, Ser. No. 336,770
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—114

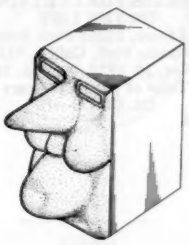
232,677
STORAGE CABINET
Ronald S. Schotland, Honey Brook Drive, R.D. 2, Princeton, N.J. 08540
Filed Dec. 18, 1972, Ser. No. 316,292
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—127



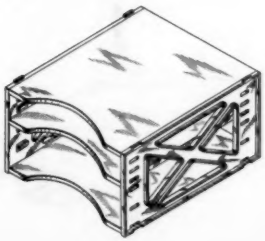
232,678
STAMP CASE
Takaji Funahashi, 1, 2-chome, Kitatakajo-machi, Nagoya, Japan
Filed Jan. 30, 1973, Ser. No. 328,140
Claims priority, application Japan Aug. 17, 1972; Aug. 31, 1972
Term of patent 14 years
Int. Cl. D20—*02;* D6—*99*
U.S. Cl. D6—130

232,679
SHOE STORAGE RACK
Eugene Weiss, 2 Alice Ave., Merrick, N.Y. 11566
Filed Sept. 21, 1973, Ser. No. 399,391
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—146

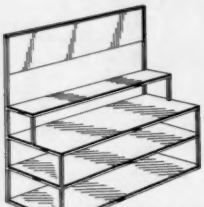
232,680
CHEST OF DRAWERS OR SIMILAR ARTICLE
Joseph H. Forrester, 9903 Melgar Drive, Whittier, Calif. 90601
Original design application June 22, 1970, Ser. No. 23,579, now Patent No. 225,150. Divided and this application July 3, 1972, Ser. No. 268,733
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—152



232,681
SHELF
Beatrice Bliss, Los Angeles, Calif., assignor to Blisscraft of Hollywood, Gardena, Calif.
Filed Mar. 26, 1973, Ser. No. 345,033
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—186

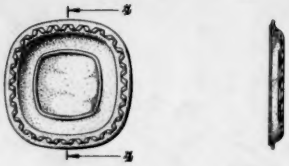


232,682
DISPLAY RACK
Raymond P. Audette, 2217 W. 2nd St., Santa Ana, Calif. 92703
Filed Apr. 16, 1973, Ser. No. 351,209
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—186



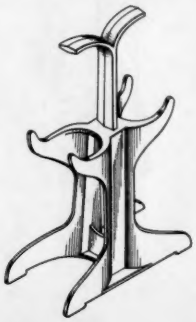
232,683
STRAND OF BEADS FOR CURTAIN ELEMENTS OR THE LIKE
Irving Levine, 23555 Park Belmonte, Calabasas Park, Calif. 91302
Filed Nov. 10, 1972, Ser. No. 305,604
Term of patent 14 years
Int. Cl. D6—*10*
U.S. Cl. D6—205

232,684
DISH OR SIMILAR ARTICLE
Clara Virginia Eicholtz, Midland, Mich., assignor to Dolco Packaging Corp., North Hollywood, Calif.
Filed July 28, 1972, Ser. No. 276,268
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—3



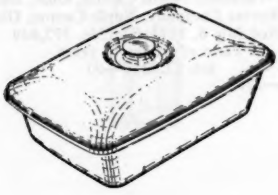
232,685
PLATE OR THE LIKE
Cynthia S. Gerow, Lafayette, N.Y., assignor to Corning Glass Works, Corning, N.Y.
Filed Dec. 29, 1972, Ser. No. 319,548
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—36

232,686
CONDIMENT RECEPTACLE CADDY
Edward N. Montesi, Barrington, R.I., assignor to Dart Industries Inc., Los Angeles, Calif.
Filed Jan. 15, 1973, Ser. No. 323,692
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D7—58

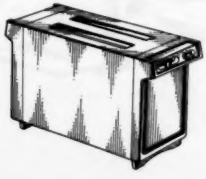


232,687
CRUET OR THE LIKE
Theodore M. Reyda, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.
Filed Mar. 19, 1973, Ser. No. 342,759
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D7—59

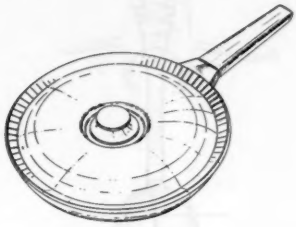
232,688
FISH COOKER
Graham John Aries, Stourbridge, England, assignor to Tower Housewares Limited, Wolverhampton, Staffordshire, England
Filed Mar. 10, 1972, Ser. No. 233,856
Claims priority, application Great Britain Sept. 10, 1971
Term of patent 14 years
The portion of the term of the patent subsequent to Sept. 28, 1985, has been disclaimed
Int. Cl. D7—*02*
U.S. Cl. D7—85

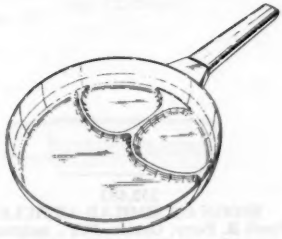


232,689
TOASTER
Masatoshi Naito, Ikeda, Fujio Sawamura, Toyonaka, Kunio Funatsu, Osaka, and Noriharu Furuyabu, Ashiya, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed May 22, 1972, Ser. No. 255,950
Claims priority, application Japan Nov. 26, 1971
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—93

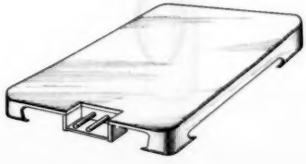


232,690
COMBINED FRYPAN AND LID THEREFOR
Graham John Aries, Stourbridge, England, assignor to Tower Housewares Limited, Wombourne, Wolverhampton, England
Filed Mar. 10, 1972, Ser. No. 233,842
Claims priority, application Great Britain Sept. 10, 1971
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—95





232,691
HOTPLATE
Iven Earl Turnipseed, 10633 Mount Gleason, Sunland, Calif. 91040, and Oral Steve Adams, 9753 Aqueduct, Sepulveda, Calif. 91343
Filed Sept. 25, 1972, Ser. No. 291,743
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—123



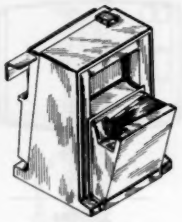
232,692
SPOON
William F. Kayhoe, 1007 Baldwin Road, Richmond, Va. 23229
Filed Mar. 30, 1973, Ser. No. 346,255
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D7—137

232,693
SPOON OR SIMILAR ARTICLE
Frank R. Perry, Oneida, N.Y., assignor to Oneida Ltd., Oneida, N.Y.
Filed May 2, 1973, Ser. No. 356,340
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D7—137

232,694
MIXER
Akikazu Iwagami and Isamu Abe, Osaka, Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan
Filed Jan. 4, 1973, Ser. No. 321,074
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D7—159

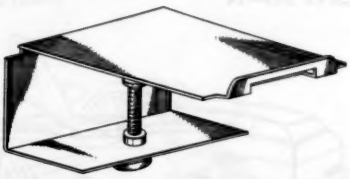
232,695
VACUUM CLEANER CASING
Richard A. Wareham, North Canton, Ohio, assignor to The Hoover Company, North Canton, Ohio
Filed July 6, 1973, Ser. No. 377,049
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D7—170

232,696
COMBINED ELECTRIC CAN OPENER AND KNIFE SHARPENER
Ralph David Gourley, Santa Barbara, Calif., assignor to Rival Manufacturing Company, Kansas City, Mo.
Filed May 26, 1972, Ser. No. 257,469
Term of patent 14 years
Int. Cl. D7—*99;* D8—*05*
U.S. Cl. D8—35

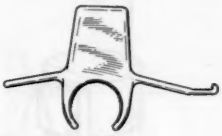


232,697
LOCK FOR ZIPPER LUGGAGE AND THE LIKE
Julius Sheiman, North Woodmere, N.Y., assignor to Crest Lock Co., Inc., New York, N.Y.
Filed Aug. 2, 1972, Ser. No. 277,246
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—123

232,698
CLAMP
John Lawlor, Tappan, N.Y., and John Sgombick, Ramsey, N.J., assignors to Xerox Corporation, Stamford, Conn.
Filed Dec. 26, 1972, Ser. No. 318,310
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—246



232,699
FLASHLIGHT BATTERY CLAMP FOR A BICYCLE
William Bartunek, Yonkers, N.Y., assignor to P. R. Mallory & Co. Inc., Indianapolis, Ind.
Filed Sept. 17, 1973, Ser. No. 398,110
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—247

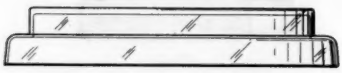


232,700
COMBINED BOTTLE AND CAP THEREFOR
John Pardo, Yonkers, N.Y., assignor to The Procter & Gamble Company, Cincinnati, Ohio
Filed Aug. 21, 1972, Ser. No. 282,298
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—71

232,701
BOTTLE
Franco Bettonica, Milan, Italy, assignor to Perlier S.p.A., Milan, Italy
Filed May 30, 1972, Ser. No. 258,195
Claims priority, application Italy Jan. 17, 1972
Term of patent 7 years
Int. Cl. D9—*01*
U.S. Cl. D9—83

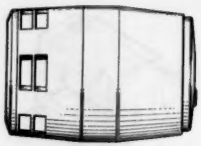
232,702
BOTTLE
Franco Bettonica, Milan, Italy, assignor to Perlier S.p.A., Milan, Italy
Filed May 30, 1972, Ser. No. 258,200
Claims priority, application Italy Jan. 17, 1972
Term of patent 7 years
The portion of the term of the patent subsequent to Sept. 10, 1981, has been disclaimed
Int. Cl. D9—*01*
U.S. Cl. D9—83

232,703
DISPLAY CONTAINER
Ernest Konzi, Montville, N.J., assignor to Sarah Coventry, Inc., Newark, N.Y.
Filed Nov. 1, 1971, Ser. No. 194,802
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—237

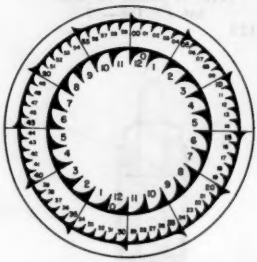


232,704
RESUSCITATOR VALVE TRIGGER
Barry K. Wagner, 313 San Elijo St., San Diego, Calif. 92106
Filed July 23, 1973, Ser. No. 381,489
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—291

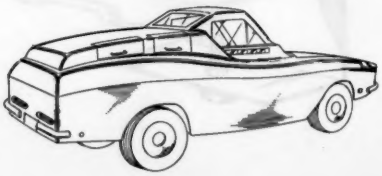
232,705
SIREN, OR SIMILAR ARTICLE
Stuart Sharenow, Kew Gardens, N.Y., assignor to Empire Machines, Inc., Westbury, N.Y.
Filed Dec. 7, 1972, Ser. No. 312,810
Term of patent 14 years
Int. Cl. D10—*05*
U.S. Cl. D10—120



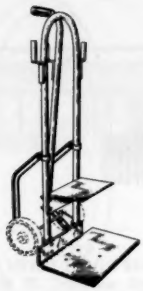
232,706
CLOCKFACE
Richard A. Strong and Rosa M. Strong, both of 6816 Longford Drive, Dayton, Ohio 45424
Original design application Nov. 5, 1970, Ser. No. 25,841, now Patent No. 224,033, dated June 27, 1972. Divided and this application Feb. 22, 1972, Ser. No. 228,484
Term of patent 14 years
Int. Cl. D10—*07*
U.S. Cl. D10—126



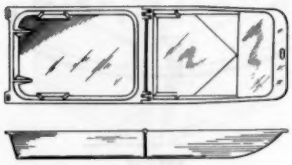
232,707
VEHICLE FOR DISPENSING PETROLEUM PRODUCTS OR THE LIKE
Delles T. Davis, Abilene, and Bruce D. Motlong, Midland, Tex., assignors to Research Fuels, Inc.
Continuation-in-part of design application Ser. No. 24,449, Aug. 12, 1970. This application Nov. 11, 1971, Ser. No. 198,059
Term of patent 14 years
Int. Cl. D12—*08*
U.S. Cl. D12—14



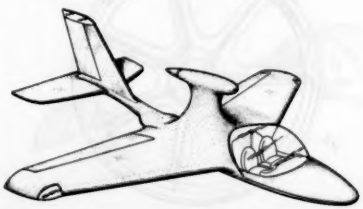
232,708
CART BODY FOR PRESSURE WASHING APPARATUS
Herbert C. Forchemer, 3811 Shasta Drive, Santa Clara, Calif. 92705
Filed July 3, 1972, Ser. No. 268,488
Term of patent 14 years
Int. Cl. D12—*02*
U.S. Cl. D12—34



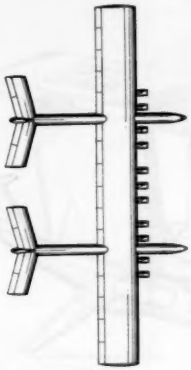
232,709
BOAT
Avery Marrin, Tulsa, Okla., assignor to Clam Corporation, Tulsa, Okla.
Filed July 20, 1972, Ser. No. 273,541
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D12—62



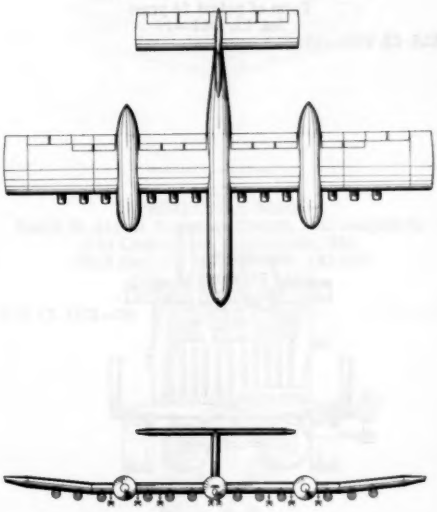
232,710
AIRCRAFT
Norman D. Moore, 1576 N. 25A, Troy, Ohio 45373
Filed July 24, 1972, Ser. No. 274,278
Term of patent 14 years
Int. Cl. D12—*07*
U.S. Cl. D12—75



232,711
AIRPLANE
Mark E. Kirchner, Mercer Island, and Philip C. Whitener, Seattle, Wash., assignors to The Boeing Company, Seattle, Wash.
Filed Dec. 26, 1972, Ser. No. 318,070
Term of patent 14 years
Int. Cl. D12—*07*
U.S. Cl. D12—76

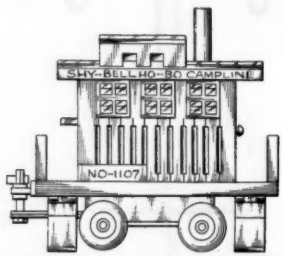


232,712
AIRPLANE
Robert B. Brown, Kent, Wash., assignor to The Boeing Company, Seattle, Wash.
Filed Dec. 26, 1972, Ser. No. 318,069
Term of patent 14 years
Int. Cl. D12—*07*
U.S. Cl. D12—80

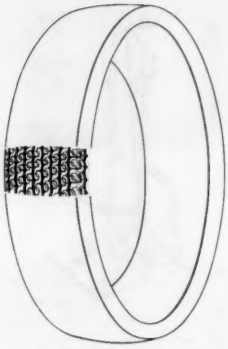


232,713
AIRCRAFT
William H. Cook, Bellevue, John K. Wimpress and Maynard L. Pennell, Seattle, and Robert P. Person, Mercer Island, Wash., assignors to The Boeing Company, Seattle, Wash.
Filed Jan. 8, 1973, Ser. No. 322,076
Term of patent 14 years
Int. Cl. D12—*07*
U.S. Cl. D12—80

232,714
MOBILE DINER
Lee Shy-Bell Schauble, Box L & S, Manteno, Ill. 60950
Filed Nov. 19, 1971, Ser. No. 200,650
Term of patent 14 years
Int. Cl. D12—*10*
U.S. Cl. D12—102

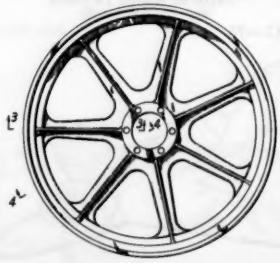


232,715
PNEUMATIC TIRE TREAD AND BUTTRESS
Clarence H. Vizina, Ferndale, Mich., assignor to Uniroyal, Inc., New York, N.Y.
Filed Oct. 20, 1972, Ser. No. 298,998
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—141

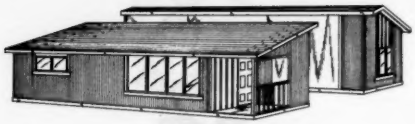


232,716
WINDSHIELD WIPER PROTECTOR
Ray M. Shenk, 2012 W. Excelsior Ave., Lot 202, Hopkins, Minn. 55343
Filed Dec. 18, 1972, Ser. No. 315,920
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—155

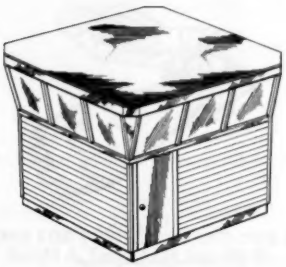
232,717
WHEEL
Elliott M. Morris, Corona Del Mar, Calif., assignor to Morris Industries, Santa Ana, Calif.
Filed July 17, 1972, Ser. No. 272,310
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—205



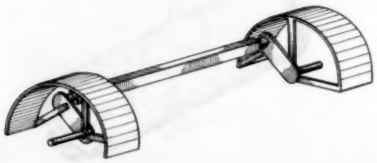
232,718
MODULAR MOBILE HOME WITH OFF-CENTER ROOF PEAK
Dan Philip Eacret, Fountain Valley, Calif., assignor to Bendix Home Systems, Inc., Atlanta, Ga.
Filed July 17, 1972, Ser. No. 272,475
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1 A



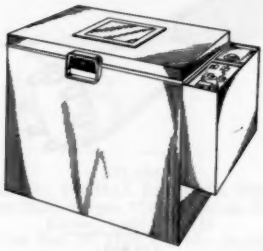
232,719
CONTROL HOUSE MODULE OR SIMILAR ARTICLE
Erbie Gail Mize and W. Norman Smith, Chattanooga, Tenn., assignors to Astec Industries, Inc., Chattanooga, Tenn.
Filed Mar. 29, 1973, Ser. No. 346,052
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1 R



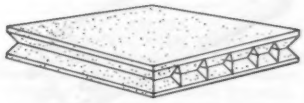
232,720
AXLE AND FENDERS UNIT
Ewen Butcher, 682 Kirk Ave., Ventura, Calif. 93003
Filed Aug. 17, 1971, Ser. No. 172,610
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D14—2



232,721
INCUBATOR-SHAKER
Alexander I. Newman, River Forest, Ill., assignor to Lab-Line Instruments, Inc., Melrose Park, Ill.
Filed May 17, 1972, Ser. No. 254,355
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D16—2

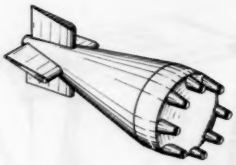


232,722
CONCRETE BLOCK
John A. Wilnau, P.O. Box 13026A, Pinecastle Station, Orlando, Fla. 32809
Filed Oct. 16, 1972, Ser. No. 297,969
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D18—2 R

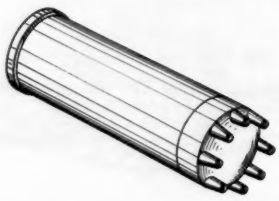


232,723
PROJECTILE NOSE
David D. Abbott, Baltimore County, Md., assignor to AAI Corporation, Cockeysville, Md.
Filed Sept. 24, 1971, Ser. No. 183,726
Term of patent 14 years
Int. Cl. D22—*03*
U.S. Cl. D22—10

232,724
PROJECTILE
David D. Abbott, Baltimore County, Md., assignor to AAI Corporation, Cockeysville, Md.
Filed Sept. 24, 1971, Ser. No. 183,729
Term of patent 14 years
Int. Cl. D22—*03*
U.S. Cl. D22—10



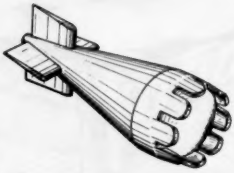
232,725
CARTRIDGE
David D. Abbott, Baltimore County, Md., assignor to AAI Corporation, Cockeysvillle, Md.
Filed Sept. 24, 1971, Ser. No. 183,730
Term of patent 14 years
Int. Cl. D22—*03*
U.S. Cl. D22—10



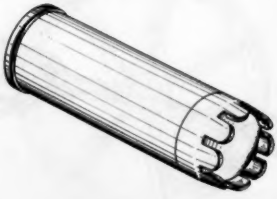
232,726
PROJECTILE NOSE
David D. Abbott, Baltimore County, Md., assignor to AAI Corporation, Cockeysville, Md.
Filed Sept. 24, 1971, Ser. No. 183,737
Term of patent 14 years
Int. Cl. D22—*03*
U.S. Cl. D22—10

232,727
PROJECTILE NOSE
David D. Abbott, Baltimore County, Md., assignor to AAI Corporation, Cockeysville, Md.
Filed Sept. 24, 1971, Ser. No. 183,738
Term of patent 14 years
Int. Cl. D22—*03*
U.S. Cl. D22—10

232,728
PROJECTILE
David D. Abbott, Baltimore County, Md., assignor to AAI Corporation, Cockeysville, Md.
Filed Sept. 24, 1971, Ser. No. 183,739
Term of patent 14 years
Int. Cl. D22—*03*
U.S. Cl. D22—10



232,729
CARTRIDGE
David D. Abbott, Baltimore County, Md., assignor to AAI Corporation, Cockeysville, Md.
Filed Sept. 24, 1971, Ser. No. 183,740
Term of patent 14 years
Int. Cl. D22—*03*
U.S. Cl. D22—10



232,730
PROJECTILE NOSE
David D. Abbott, Baltimore County, Md., assignor to AAI Corporation, Cockeysville, Md.
Filed Sept. 24, 1971, Ser. No. 183,741
Term of patent 14 years
Int. Cl. D22—*03*
U.S. Cl. D22—10

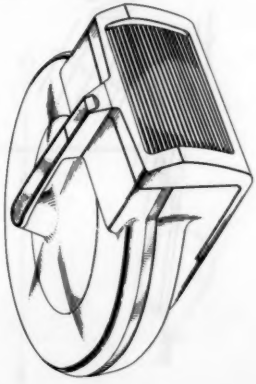
232,731
BROADHEAD FOR HUNTING ARROW
Anthony L. Altier, Honesdale, Pa., assignor to Indian Industries, Inc., Evansville, Ind.
Filed July 20, 1972, Ser. No. 273,452
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—12

232,732
HOLDER FOR PESTICIDES AND THE LIKE
Harold A. Lutes, 5128 Corolite St., Long Beach, Calif. 90808
Filed Nov. 17, 1972, Ser. No. 307,427
Term of patent 14 years
Int. Cl. D22—*06*
U.S. Cl. D22—18

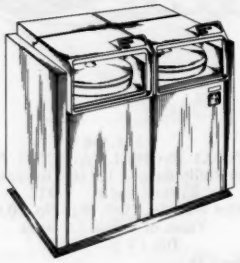
232,733
FISH LURE
Phillip A. Rabideau, 201 Penhurst Drive, Pittsburgh, Pa. 15235
Filed Aug. 14, 1972, Ser. No. 280,653
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—27

232,734
DENTAL INCISAL PACKING TOOL
Robert Philip Berger, 17110 Clemons Drive, Encino, Calif. 91316
Filed Dec. 29, 1969, Ser. No. 20,652
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—1 D

232,735
MAGNETIC DISK MODULE
John Orville Kinsey, Morgan Hill, Bernard William McVey, Saratoga, and David Graham Moore, Richard Burke Mulvany, and Philip Cleer Yenerich, San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Mar. 12, 1973, Ser. No. 340,402
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C

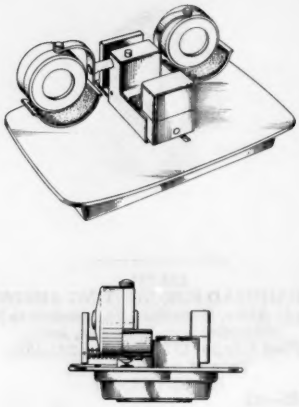


232,736
DISK STORAGE FACILITY
Philip Cleer Yenerich, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Mar. 12, 1973, Ser. No. 342,898
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C

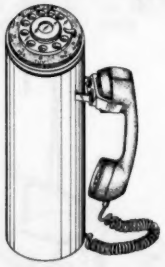


232,737
TELEVISION ANTENNA
Dominick Padilla, New York, and Arthur A. Fink, Yonkers, N.Y., assignors to RMS Electronics, Inc., Bronx, N.Y.
Filed Mar. 15, 1972, Ser. No. 235,114
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 F

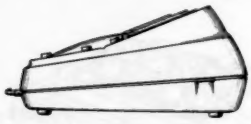
232,738
ACOUSTIC COUPLER
Virgil H. Johnson, Churubusco, Ind., assignor to Minnesota Mining and Manufacturing Company
Filed Apr. 7, 1972, Ser. No. 242,271
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 A



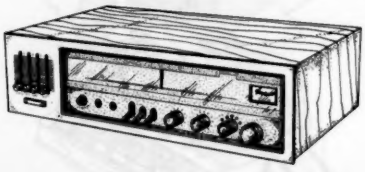
232,739
CYLINDRICAL TABLE TELEPHONE
Bruce Wasserman, 326 W. 23rd St., New York, N.Y. 10011
Filed Mar. 16, 1973, Ser. No. 342,184
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 A



232,740
TELEPHONE OR SIMILAR ARTICLE
Nobuyasu Takahashi and Nobuji Nakamura, Tokyo, Japan, assignors to Kabushikikaisha Taikodenki Seisakusho, Shinagawa-ku, Tokyo, Japan
Filed June 7, 1973, Ser. No. 367,829
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 A

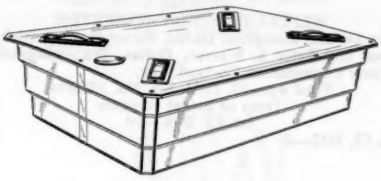


232,741
AMPLIFIER
Hiroshi Hirasa and Benito Mishiro, Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Oct. 2, 1973, Ser. No. 402,854
Claims priority, application Japan Apr. 11, 1973
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 L

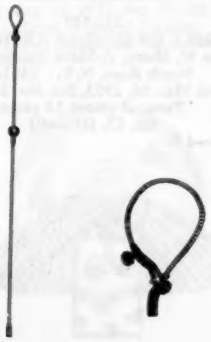


232,742
OWL FIGURINE
Stig Hedman, Gavle, Sweden, and Torkel Nilson, Redmond, Wash.; said Hedman assignor to said Nilson
Filed Aug. 29, 1972, Ser. No. 284,637
Term of patent 3½ years
Int. Cl. D11—*02*
U.S. Cl. D29—23 B

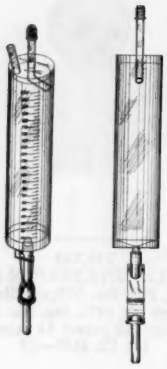
232,743
LIQUID SUPPLEMENT FEEDER FOR CATTLE
Lee R. Mangrum, P.O. Box 397, Giddings, Tex. 78942
Filed Sept. 29, 1972, Ser. No. 293,321
Term of patent 14 years
Int. Cl. D30—*03*
U.S. Cl. D30—13



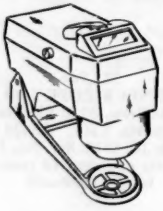
232,744
CHOKELESS NECK ROPE FOR A HORSE
James D. McGrew, 8120 Rio Linda Blvd., Elverta, Calif. 95626
Filed Feb. 16, 1973, Ser. No. 333,050
Term of patent 14 years
Int. Cl. D30—*04*
U.S. Cl. D30—19



232,745
APPARATUS FOR MEASURING LIQUIDS
Terrance O. Noble, 1416 E. 72nd St., Minneapolis, Minn. 55423
Filed July 18, 1973, Ser. No. 380,405
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D32—1



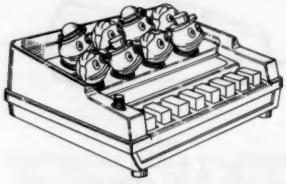
232,746
REFLECTION DENSITOMETER
Perry Dwaine Hampton, Dallas, James R. Cox, Richardson, and Peter J. Warren, Dallas, Tex., assignors to Cosar Corporation, Garland, Tex.
Filed Apr. 30, 1973, Ser. No. 355,674
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D32—2



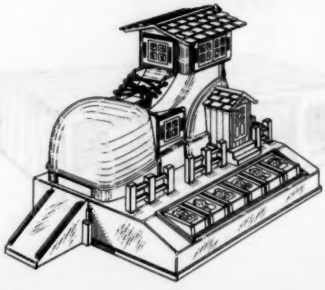
232,747
DOLL OR SIMILAR ARTICLE
Jo Anne W. Sharp, Ji-Meva Farms, Rte. 104, North Rose, N.Y. 14516
Filed Mar. 26, 1973, Ser. No. 344,710
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—4 R

232,748
KNIGHT CHESSMAN
Lawrence S. Pratt, 39 Gramercy Park, New York, N.Y. 10010
Filed Nov. 24, 1972, Ser. No. 309,442
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 CH

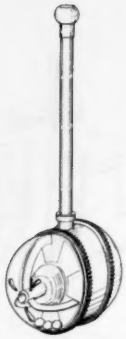
232,749
MUSICAL TOY
Michael R. Meyers, 18 Lyncrest Drive, Munsey, N.Y. 12123, and Michael Langieri, 8 Cedar St., Butler, N.J. 07405
Filed Oct. 2, 1972, Ser. No. 294,336
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 C



232,750
PUSH-BUTTON ACTION TOY
Michael Langieri, Butler, N.J., assignor to Questor Corporation, Toledo, Ohio
Filed Oct. 2, 1972, Ser. No. 294,447
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 A

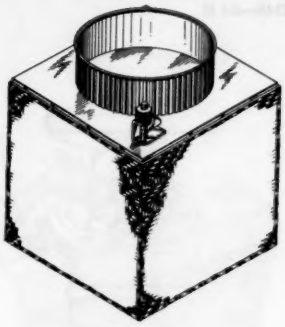


232,751
TRUNDLE TOY
Eugene J. Echterling, Woodland Hills, Calif., assignor to Questor Corporation, Toledo, Ohio
Filed Jan. 24, 1973, Ser. No. 326,304
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 D



232,752
DOLL
Ruby M. Partridge, 552 Crestwood Ave., North Vancouver, British Columbia, Canada
Filed Oct. 4, 1972, Ser. No. 298,762
Term of patent 3½ years
Int. Cl. D21—*01*
U.S. Cl. D34—4 R

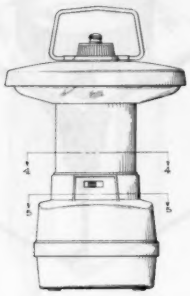
232,753
FLOWER POT WITH WATERING AUTOMAT
Eino Jalakas, Violvagen 2, Stenungsund, Sweden
Filed Feb. 3, 1972, Ser. No. 223,408
Term of patent 7 years
Int. Cl. D11—*02*
U.S. Cl. D35—3 R



232,754
CHARM OR SIMILAR ARTICLE
Bernard Bernstein, 3224 Bronx Blvd., Bronx, N.Y. 10467
Filed Feb. 2, 1973, Ser. No. 328,907
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—17

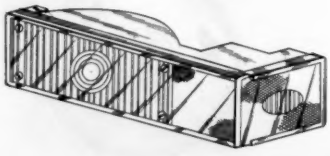
232,755
COMBINATION SPEAKER AND LAMP
Arthur Robson, Jericho, N.Y., assignor to Morse Electro Products Corp., Brooklyn, N.Y.
Filed Aug. 23, 1972, Ser. No. 283,207
Term of patent 7 years
Int. Cl. D26—*05;* D14—*01*
U.S. Cl. D48—20 D

232,756
ELECTRIC LANTERN
Daniel C. Oakley, Madison, Nolan K. Rhoades, Beloit, and Arthur R. Schmidt, Madison, Wis., assignors to ESB Incorporated
Filed Nov. 13, 1972, Ser. No. 306,002
Term of patent 14 years
Int. Cl. D26—*02*
U.S. Cl. D48—24 R



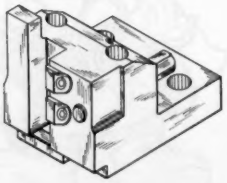
232,757
CIGARETTE LIGHTER
Kenjiro Goto, Tokyo, Japan, assignor to Mansei Kogyo Kabushiki Kaisha, Kawaguchi-shi, Saitama, Japan
Filed Mar. 15, 1973, Ser. No. 341,683
Term of patent 14 years
Int. Cl. D27—*05*
U.S. Cl. D48—27 R

232,758
WRAP-AROUND TAIL LIGHT
Peter Hedgewick, Windsor, Ontario, Canada, assignor to International Tools (1973) Limited, Windsor, Ontario, Canada
Filed May 5, 1972, Ser. No. 250,841
Term of patent 14 years
Int. Cl. D26—*06*
U.S. Cl. D48—32 R

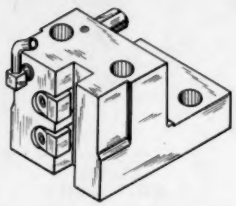


232,759
HEIGHT MEASURING SCALE
Merwin Guy Hall, Rte. 1, Box 268, Covington, La. 70433
Filed Oct. 12, 1972, Ser. No. 296,966
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D52—6 A

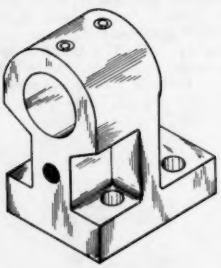
232,760
TOOL HOLDER FOR A LATHE TOOL, OR SIMILAR ARTICLE
Pasquale Joseph Lanese, Mayfield Heights, Ohio, assignor to The Warner & Swasey Company, Cleveland, Ohio
Filed Sept. 11, 1972, Ser. No. 287,632
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D54—6



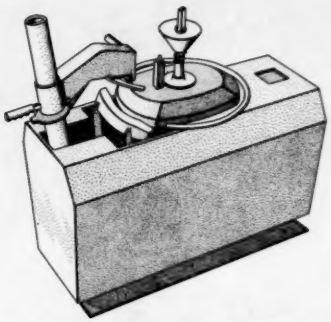
232,761
TOOL HOLDER FOR A LATHE TOOL, OR SIMILAR ARTICLE
Pasquale Joseph Lanese, Mayfield Heights, Ohio, assignor to The Warner & Swasey Company, Cleveland, Ohio
Filed Sept. 11, 1972, Ser. No. 287,748
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D54—6



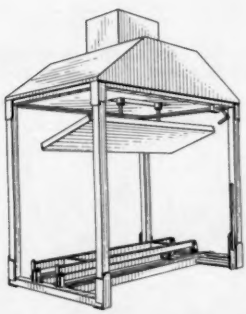
232,762
TOOL HOLDER FOR END WORKING TOOLS FOR A LATHE, OR SIMILAR ARTICLE
Pasquale Joseph Lanese, Mayfield Heights, Ohio, assignor to The Warner & Swasey Company, Cleveland, Ohio
Filed Sept. 11, 1972, Ser. No. 287,987
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D54—6



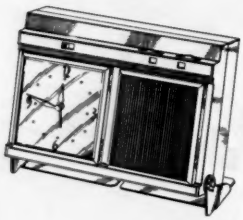
232,763
AUTOMATIC TIRE CHANGER MACHINE
John T. Curtis, Hamilton, Ohio, assignor to Magnum Automotive Equipment, Inc., Cincinnati, Ohio
Filed June 1, 1972, Ser. No. 258,945
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D54—13 R



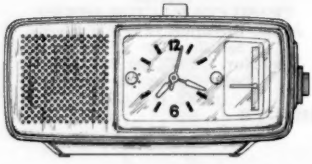
232,764
TRASH COMPACTOR DEVICE
Arthur B. Turley, 1216 S. Kentucky, Sedalia, Mo. 65301
Filed Nov. 3, 1972, Ser. No. 303,537
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D55—1 B



232,765
CLOCK-RADIO
Lester Kenneth Franklin, deceased, late of Hong Kong, by Mildred P. Franklin, executor, 39 Burton Road, Toronto 10, Ontario, Canada
Filed July 7, 1972, Ser. No. 269,759
Claims priority, application Great Britain Feb. 11, 1972
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D56—4 B

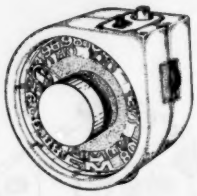


232,766
CLOCK-RADIO
John T. Houlihan, Manlius, N.Y., assignor to General Electric Company
Filed Dec. 22, 1972, Ser. No. 317,675
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D56—4 B

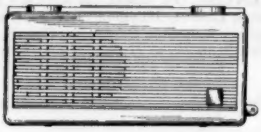


232,767
MINIATURE RADIO RECEIVER
Jack D. Stevens, 125 Willlow Drive, Danville, Calif. 94526
Filed May 30, 1973, Ser. No. 365,314
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 B

232,768
RADIO RECEIVER
Benito Mishiro, Sakai, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Mar. 21, 1973, Ser. No. 343,409
Claims priority, application Japan Dec. 8, 1972
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 B

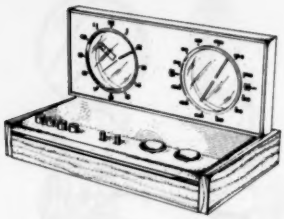


232,769
RADIO RECEIVER
Ser-Kit Au and Man-Sing Lui, both of Koshun House, 5th Floor, 331B, Nathan Road, Kowloon, Hong Kong
Filed July 11, 1972, Ser. No. 270,847
Claims priority, application Great Britain Jan. 12, 1972
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 B



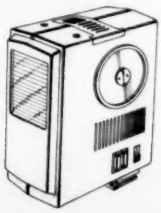
232,770
RADIO RECEIVER
Masaaki Miyamoto, Moriguchi, Ken Kawamura, Osaka, and Minoru Owada, Suita, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Dec. 11, 1972, Ser. No. 313,882
Claims priority, application Japan June 14, 1972
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D56—4 B

232,771
COMBINED RADIO RECEIVER AND CLOCK
Kunio Hoshino, Kadoma, and Kazumasa Takenaka and Masaaki Miyamoto, Moriguchi, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Dec. 7, 1972, Ser. No. 313,169
Claims priority, application Japan June 12, 1972
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D56—4 B

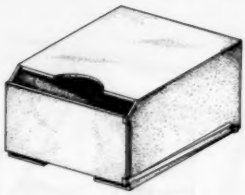


232,772
PAPER TOWELING OR SIMILAR ARTICLE
Gordon D. Thomas, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.
Filed Mar. 9, 1973, Ser. No. 339,553
Term of patent 14 years
Int. Cl. D5—*06*
U.S. Cl. D59—2 A

232,773
ELECTRONIC FLASH
Takaharu Kato, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan
Filed Jan. 29, 1973, Ser. No. 327,401
Claims priority, application Japan Aug. 1, 1972
Term of patent 14 years
Int. Cl. D16—*05*
U.S. Cl. D61—1 F



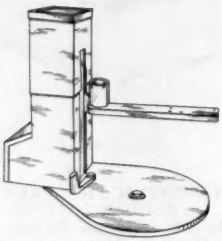
232,774
SLIDE DISPENSER FOR A TABLE VIEWER
Peter T. Quinn, Littleton, Colo., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Jan. 6, 1972, Ser. No. 215,993
Term of patent 14 years
Int. Cl. D16—*99*
U.S. Cl. D61—1 S



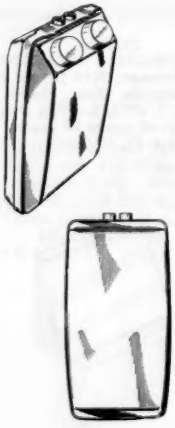
232,775
PHOTOGRAPHIC FILM CASSETTE OR SIMILAR ARTICLE
Vaito K. Eloranta, Needham, Richard Paglia, Carlisle, Richard R. Wareham, Marblehead, and Nicholas Gold, Arlington, Mass., assignors to Polaroid Corporation, Cambridge, Mass.
Filed Sept. 28, 1972, Ser. No. 292,965
Term of patent 14 years
Int. Cl. D16—*99*
U.S. Cl. D61—1 T

232,776
COMBINED MEMORANDA AND PENCIL HOLDER
Mauritz C. Ranseen, 3019 Bryant Ave. S., Minneapolis, Minn. 55408
Filed Oct. 3, 1972, Ser. No. 294,635
Term of patent 14 years
Int. Cl. D19—*99*
U.S. Cl. D74—1 C

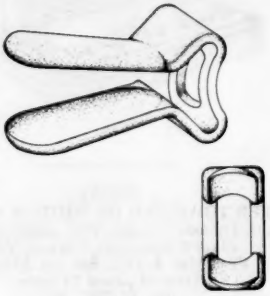
232,777
ADJUSTABLE MOUNTING BASE FOR A PATIENT SUPPORTING UNIT
George A. Fortnam, Des Moines, Iowa, assignor to Den-Tal-Ez Mfg. Co., Des Moines, Iowa
Filed Aug. 25, 1972, Ser. No. 283,978
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D83—1 E



232,778
MEDICAL ELECTRICAL EQUIPMENT CASE
Richard M. Hagen, Chaska, Robert L. Jordan, Coon Rapids, and William E. Greuloch, Minneapolis, Minn., assignors to Medtronic, Inc., Minneapolis, Minn.
Filed July 23, 1973, Ser. No. 381,503
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D83—1 F

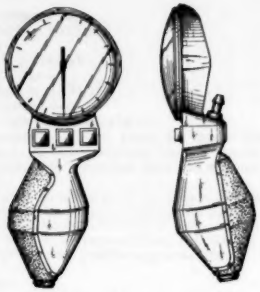


232,779
VAGINAL SPECULUM
Donald M. Olson, Oakland, Calif., assignor to Max Morris, San Jose, and Earl L. Kirkman, Felton, Calif., fractional part interest to each
Filed Aug. 10, 1972, Ser. No. 279,641
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—12 R

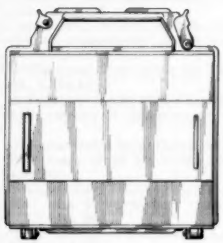


232,780
TEAT DILATOR FOR COWS
Eli A. Zackheim, Norwich, Conn., assignor to Jules Silver, Norwich, Conn.
Filed July 7, 1972, Ser. No. 269,613
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—12 R

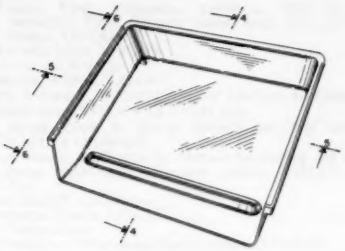
232,781
SPHYGMOMANOMETER
Jan Raczkowski and Stefania Raczkowski, Long Beach, N.Y., assignors to Propper Manufacturing Co., Inc., Long Island City, N.Y.
Filed Feb. 8, 1974, Ser. No. 440,651
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—12 R



232,782
TAPE-REEL STORAGE CASE
Karl D. Kryter, Los Altos, Calif., assignor to Acousis Company, Los Altos, Calif.
Filed Dec. 29, 1972, Ser. No. 319,892
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D87—1 D



232,783
TOTE TRAY
George Payne, Bedford Hills, N.Y., assignor to American Standard Inc., New York, N.Y.
Filed Sept. 25, 1972, Ser. No. 291,870
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D87—1 R



232,784
EMBOSSED PLASTIC SHEET MATERIAL OR SIMILAR ARTICLE
Paul Hirschl, New York, N.Y., assignor to Ropa Industries, Inc., New York, N.Y.
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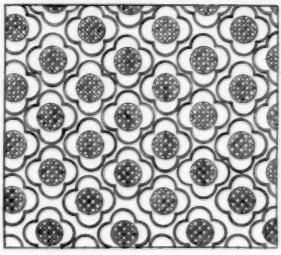

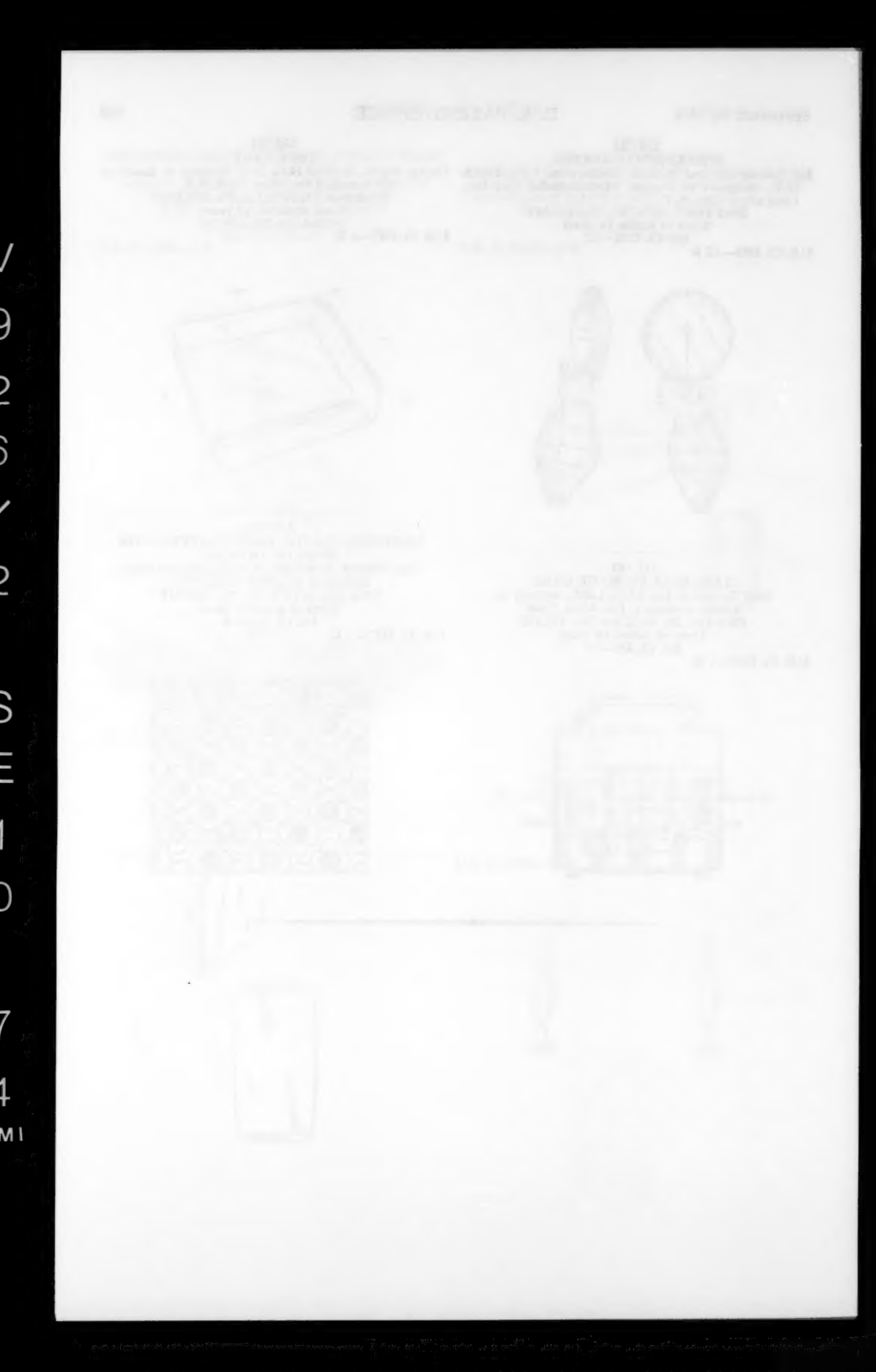

LIST OF PATENTEES

TO WHOM

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Asahara, Yoshiyuki; and Izumitani, Tetsuro, to Hoya Glass Works, Ltd. Abnormal dispersion glass exhibiting the abnormal partial dispersion in the infrared region. 3,834,913, Cl. 106-53.000.
Asami, Kazuto: *See—*
Inoue, Komei; and Asami, Kazuto, 3,834,116.
Asami, Tomiaki: *See—*
Kurokawa, Junji; Watanabe, Toshio; and Asami, Tomiaki, 3,834,810.
Ashfield, Herbert Edward, to Brown, David, Tractors Limited. Vehicle braking by gearing lock up clutches. 3,834,498, Cl. 192-4.00a.
Ashland Oil, Inc.: *See—*
Carpenter, David B.; and Mittendorf, Jane W., 3,835,183.
Ashton, Harold P.: *See—*
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Aspinwall, Peter, to Comstock & Wescott, Inc. Moving gate for hopper discharging flat articles of irregular thickness. 3,834,582, Cl. 221-248.000.
Astec Industries, Inc.: *See—*
Brock, James Donald; and Mize, Erbie Gail, 3,834,595.
Astedt, George; and Benasutti, Roger, to Conwed Corporation. Holding clip for panel board in ceiling grids. 3,834,106, Cl. 52-489.000.
Astro-Arc Co.: *See—*
Kazlauskas, Gasparas, 3,835,286.
Astrom, Ingmar: *See—*
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Atkinson, Eulas R., to ACF Industries, Incorporated. Ball valve structure having pressure actuated seats. 3,834,664, Cl. 251-174.000.
Atlantic Richfield Company: *See—*
Allen, William E.; and Gower, Bob G., 3,835,071.
Atlas Technology Corporation: *See—*
Hradcovsky, Rudolf J., 3,834,999.
Au, Kenneth K., to Microsystems International Limited. Ring-counter. 3,835,302, Cl. 235-92.0ng.
Auerbach, David. System for the proportional evaluation of quantitative flow of fluids. 3,834,230, Cl. 73-199.000.
Auidi, Rugero W. Form tool fixture. 3,834,086, Cl. 51-218.00a.
Aumuller, Walter: *See—*
Weyer, Rudi; Hitzel, Volker; Aumuller, Walter; and Heerdt, Ruth, 3,835,188.
Automobiles Peugeot: *See—*
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Avco Corporation: *See—*
Hoffmann, Ambros S., 3,834,157.
Strasburg, Richard N.; and Critchlow, Ezra F., 3,834,181.
Watkins, Sidney C., 3,834,627.
Averbach, Benjamin L. Method of making a gold club wherein ratio of gross weight to swing weight is less than 0.62. 3,834,700, Cl. 273-77.00r.
Ayers, Maurice Donald, to Metal Innovations, Inc. Method of producing tool steel billets from water atomized metal powder. 3,834,004, Cl. 29-420.500.
Ayton, Ian F.: *See—*
Dunn, Ralph; Ayton, Ian F.; Cane, Albert; Collins, Harold B.; Lewis, J. Stephen; Morris, Joseph P.; and Shapero, Wallace H., 3,834,974.
Azorlosa, Julian L.; and Williams, Earl P., to GAF Corporation. Poly-N-vinyl lactam-polyethyleneimine flocculating composition. 3,835,084, Cl. 260-29.6nr.
B & H Manufacturing Company, Inc.: *See—*
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B. F. Goodrich Company, The: *See—*
Lydick, Leslie B., 3,835,116.
Babcock & Wilcox Company, The: *See—*
Blazewicz, Andrew J.; Piaskowski, Edward J.; and Wood, James F., 3,834,328.
Krippene, Brett C.; Clark, Merle M.; and Triffon, Apostol, 3,834,858.
Bach, Hartwig C.; and Hinderer, Helmut E., to Monsanto Company. Polyimides of conjugated azo diamines. 3,835,120, Cl. 260-47.0cp.
Bach, Hartwig C., to Monsanto Company. Process for the preparation of benzonitrile. 3,835,177, Cl. 260-465.00r.
Bachman, John A.: *See—*
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Badische Anilin & Soda-Fabrik Aktiengesellschaft: *See—*
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Badische Anilin- & Soda-Fabrik Aktiengesellschaft: *See—*
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Paton, Boris Evgenievich; Lebedev, Vladimir Konstatinovich; Medovar, Boris Izrailevich; Latash, Jury Vadimovich; Bondarenko, Oleg Petrovich; Baglai, Vitaly Mikhailovich; Sidorenko, Mikhail Nikolaevich; Leibenzon, Semen Abramovich; Kaganovsky, Gary Petrovic; Altgauzen, Andrei Pavlovich; Nikolsky, Leonid Evgenievich; Gorynina, Zoya Alexandrovna; Safronova, Ljudmila Andreevna; Katsevich, Leonid Savvich; Volokhonsky, Lev Avramovich; Nikulin, Alexandr Alexandrovich; Artemiev, Vladimir Dmitrievich; Edemsky, Vladiir Mikhailovich; and Voronin, Georgy Alexandrovich, 3,835,227.
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Baillargeon, Frank. Engine heating device. 3,834,356, Cl. 122-265.000.

Bajcar, Miles S.; Wallace, Gary Leonard; and Linehan, John J., to Chemetron Corporation. Rapid action article transfer apparatus. 3,834,515, Cl. 198-27.000.

Baker Brush Co., Inc.: *See*—
Weiss, Gerhart, 3,834,863.

Baker Perkins Limited: *See*—
Edwards, Albert, 3,834,442.

Baker, William Albert; Wheatley, John Arthur; Read, Peter John; Latimer, Keith Graham; and Reynolds, Terence David Warren, to Alcan Research and Development Limited Method of making aluminium bearing alloy strip. 3,833,983, Cl. 29-149.50s.

Baker, William L.; and Turchi, Peter John, to United States of America, Air Force. Electromagnetic implosion X-ray source. 3,835,330, Cl. 250-493.000.

Balan, Markandan Hari. Redundant electrical system. 3,835,333, Cl. 307-64.000.

Balas, Gizella: *See*—
Kormendy, Ferenc; Nemeth, Ferenc; Muranyi, Istvan; and Balas, Gizella, 3,834,876.

Ball, Richard B.; Gurler, Tuygan; Clement, Carl J.; and Horine, David A. Hand held teaching machine. 3,834,041, Cl. 35-9.00a.

Bando America Inc.: *See*—
Ahn, Byong Kwon, 3,834,403.

Banyu Pharmaceutical Co. Ltd.: *See*—
Miyano, Tetsuji; Suzuki, Kunio; and Fukatsu, Hiroshi, 3,835,146.

Barber, Walter W. Mount for cylindrical roll. 3,834,639, Cl. 242-68.000.

Baribeau, Ronald O.; and Baribeau, Russell A. Fuel injection nozzle for internal combustion engine. 3,834,678, Cl. 261-41.00d.

Baribeau, Ronald O.; and Baribeau, Russell A. Fuel injection system for internal combustion engine. 3,834,679, Cl. 261-41.00d.

Baribeau, Russell A.: *See*—
Baribeau, Ronald O.; and Baribeau, Russell A., 3,834,678.
Baribeau, Ronald O.; and Baribeau, Russell A., 3,834,679.

Barlett, Jamie S. Precast railroad tie and tie plate. 3,834,620, Cl. 238-287.000.

Barna, Gabriel G.; and Jasinski, Raymond J., to Texas Instrumetns, Incorporated. Fe-1173 electro-chemical sensor and activating method therefor. 3,835,009, Cl. 204-195.00g.

Barnes, Clarence A., Jr.; and Chadsey, Carl T., Jr., to Reflectomorphics, Inc. Anamorphic greeting cards and other structural graphic pieces. 3,834,051, Cl. 40-124.100.

Barnett, Allan E.: *See*—
Sinfelt, John H.; and Barnett, Allan E., 3,835,034.

Barnett, Cecil, to Raphael's Limited. Monwheel plastic lens edger. 3,834,089, Cl. 51-284.000.

Barney, Walter W., of 51% to Hebert, Paul W. Card coding and readout system. 3,835,301, Cl. 235-61.11a.

Barr, Arthur C. Nursing unit with improved plastic liner. 3,834,570, Cl. 215-11.00e.

Barrett, Mel: *See*—
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Barron, Benny G.: *See*—
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Barrus, Gordon Brent; Emenaker, Leo Joseph; and Melissa, Raymond Franklin, to Pertec Corporation. High speed speed line printing apparatus. 3,834,303, Cl. 101-93.00c.

Bartell, Ralph A., to Warner-Lambert Company. Container closure for lyophilized products. 3,834,571, Cl. 215-256.000.

Barthod-Malat, Jean. Descaling apparatus with rotary jets. 3,834,625, Cl. 239-227.000.

Bartholomew, Donald D. High efficiency-low pollution emission engine. 3,834,364, Cl. 123-119.00e.

Baruffini, Agostino: *See*—
Arsura, Emilio; Baruffini, Agostino; Giald, Franco; Pellegrini, Giovanni; Ponci, Riccardo; and Scrivani, Pietro, 3,835,189.

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Bates, Leo D.; and Caldwell, Melvin R., to Raymond Corporation, The. Manually-controlled hydraulic actuator systems. 3,834,494, Cl. 187-9.000.

Battelle Memorial Institute: *See*—
Croquelois, Jean-Pierre; Erskine, William; and Gerber, Raymond, 3,834,301.

Bauer, Benjamin B., to Columbia Broadcasting System, Inc. Matrix decoders for quadraphonic sound system. 3,835,255, Cl. 179-1.0gq.

Bauer, Johann: *See*—
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Baum, George; and Lynn, Merill, to Corning Glass Works. Potassium ion sensitive electrode. 3,835,011, Cl. 204-195.00m.

Baum, William: *See*—
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Baxter Labortories, Inc.: *See*—
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Bayer Aktiengesellschaft: *See*—
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Spreckelmeyer, Bernhard; Hinsche, Friedrich; and Schabach, Werner, 3,834,917.
Vernaleken, Hugo; Court, Otto; Bottenbruch, Ludwig; and Lippert, Axel, 3,834,441.
Wagner, Kuno; and Hajek, Manfred, 3,835,191.
Widdig, Arno; Kuhle, Engelbert; and Kaspers, Helmut, 3,835,164.

Bazant, Erich; Cerjak, Horst; and Scholz, Manfred, to Siemens Aktiengesellschaft. Connecting piece for pressure vessel cover of nuclear reactors. 3,834,740, Cl. 285-55.000.

Bazant, Vladimir: *See*—
Novosad, Jan; Bazant, Vladimir; Smid, Vlastimil; and Majzlik, Ratibor, 3,834,624.

BBC Brown, Boveri & Cie Aktiengesellschaft: *See*—
Gammel, Gregor; Heidtmann, Uwe; and Muller, Elmar, 3,834,454.

Beal, Philip F., III; and Pike, JOhn E., to Upjohn Company, The. PGA_3. 3,835,181, Cl. 260-468.00d.

Beam, Jon W. Tobacco smoking equipment. 3,834,399, Cl. 131-3.000.

Bean, Kenneth E.; and Gleim, Paul S., to Texas Instruments Incorporated. Method for isolation of circuit regions in monolithic integrated circuit structure. 3,834,958, Cl. 156-8.000.

Beaumont, Gregory, to Meyers Taylor Pty., Ltd. Window assembly. 3,834,078, Cl. 49-85.000.

Beck, Charles A., to Diamond Shamrock Corporation. Hard surface cleaners. 3,835,070, Cl. 252-526.000.

Becker, Otto Alfred. Insulating wall unit. 3,834,096, Cl. 52-172.000.

Becker, William S., Jr. Furniture module and furniture items resulting from module combinations. 3,834,776, Cl. 312-108.000.

Beckman Instruments, Inc.: *See*—
Burke, Raymond William, 3,834,243.
Jones, Robert H., 3,834,588.

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Becton, Dickinson and Company: *See*—
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Behrendt, Otto, to Schloemann Aktiengesellschaft. Horizontally acting extrusion discard cutting device which can turn over and transfer extrusion discs cut off the extrusion discard. 3,834,261, Cl. 83-161.000.

Behrens, Roy E.; and Donahue, Leo O., to Graphic Engineers, Inc. Interceptor for forming gaps in papers carried by a conveyor. 3,834,288, Cl. 93-93.00r.

Behrens, Roy E.; and Donahue, Leo O., to Graphic Engineers, Inc. Photoelectric counter for paper conveyor. 3,834,289, Cl. 93-93.00c.

Beichel, Rudi; and Reynolds, Clifton J., to Aerojet-General Corporation. Fluid-operable linear actuators. 3,834,283, Cl. 92-33.000.

Bell, Dick: *See*—
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Bell, Dunham: *See*—
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Bell Telephone Laboratories, Incorporated: *See*—
Medill, David Gordon; and Vachon, Patrick Alban, 3,835,259.

Bell, Verna S. Permanent wave hair roller washer. 3,834,530, Cl. 209-3.000.

Bell-Fruit Manufacturing Company Limited: *See*—
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Belonogov, Anatoly Mikhailovich: *See*—
Solonitsyn, Rem Alexandrovich; Vjukov, Ivan Elizarovich; Gorbachev, Leonid Alexeevich; Belonogov, Anatoly Mikhailovich; Vorobiev, Gennady Afanasievich; and Efimov, Alexandr Vasilievich, 3,834,982.

Belozerova, Olga Petrovna: *See*—
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Belsdorf, Manfred; and Stuck, Klaus. Toothed rack for a rack-and-pinion steering gear or motor vehicles. 3,834,247, Cl. 74-422.000.

Belz, Ray J.: *See*—
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Benasutti, Roger: *See*—
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Benchemoul, Claude, to Rhone-Poulenc-Textile. Apparatus for the transport of yarns. 3,834,600, Cl. 226-97.000.

Benda, Helmut: *See*—
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Bendix Corporation, The: *See*—
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Rhee, Seong Kwan; and Kwolek, John P., 3,835,118.
Thakore, Kaushik H., 3,835,350.
Bengt, Fredrikson; and Kjell, Bergman, to Allmanna Svenska Elektriska Aktiebolaget. Means for automatic control of batching when casting from a heat-retaining of casting furnace or ladle (crucible). 3,834,587, Cl. 222-56.000.
Bennington, Russell J.; and Szalay, Laszlo G., to Budd Company, The. Article transfer apparatus. 3,834,555, Cl. 214-1.0bt.
Benvegno, George J.: *See—*
Davies, Ronald F.; and Benvegno, George J., 3,835,066.
Bequet, Jean Francois; Dubois, Paul; and Van Asbroeck, Roger, to Solvay & Cie. Device for making sheets. 3,834,853, Cl. 425-336.000.
Berg, Leo; Lenemann, Gerhard Johann; and Kinneging, Johannes Wilhelmus, to Knapsack Aktiengesellschaft. Filling nozzle with heating jacket. 3,834,622, Cl. 239-132.100.
Berg, Rudolph G.: *See—*
Tate, Bryce E.; and Berg, Rudolph G., 3,835,162.
Bergmann, Karl-Heinz: *See—*
Heyl, Walter; Bergmann, Karl-Heinz; and Kern, Hermann, 3,834,281.
Bergmeister, Eduard; Ludwig, Peter; Wiest, Hubert; and Hafener, Klaus, to Wacker-Chemie GmbH. Polymeric dispersions of pressure-sensitive adhesives and process. 3,835,086, Cl. 260-33.60a.
Bergwerksverbank GmbH: *See—*
Ratz, Walter; and Laval, Willy, 3,834,524.
Bernard, Jacques J. P., to Degremont, Societe Generale d'Epuration et d'Assainissement. Combined apparatus for the biological purification of waste waters. 3,834,540, Cl. 210-195.000.
Bernardot, Andre: *See—*
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Berquist, John E. Method and apparatus for cutting doors. 3,834,034, Cl. 33-194.000.
Berrry, Trevis L.: *See—*
Acker, Douglas B.; and Berrry, Trevis L., 3,834,111.
Berry, Milton E., to Southwire Company. Method and apparatus for maintaining a smooth casting wheel using a wheel spreader and crack closer. 3,834,444, Cl. 164-87.000.
Bertheas, Jean, to Thomson-CSF. Multibeam steering system for a circular section acoustic transducer array. 3,835,448, Cl. 340-6.00r.
Bertolacini, Ralph J.; Lehmann, Gerald M.; and Wollaston, Eugene G., to Standard Oil Company. Catalytic cracking with reduced emission of sulfur oxides. 3,835,031, Cl. 208-120.000.
Bertorelli, Orlando L.: *See—*
Almagro, Guillermo; Bertorelli, Orlando L.; Mays, Robert K.; Williams, Lloyd E.; and Zimmerman, Howard F., Jr., 3,835,216.
Berzins, Leonids: *See—*
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Bevan, Richard John Armstrong: *See—*
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Beyer, Klaus D.; and Lever, Reginald F., to International Business Machines Corporation. Method of forming doped silicon oxide layers on substrates and paint-on compositions useful in such methods. 3,834,939, Cl. 117-201.000.
Bhagat, Gopal C.; and Veillard, George E., to Xerox Corporation. Copying machine with means for mounting carrier bead pickoff roller therein. 3,834,804, Cl. 355-3.00r.
Bhutani, Sudhir K.: *See—*
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Bielfeldt, Gerlinde: *See—*
Bielfeldt, Heinz, deceased, 3,834,053.
Bielfeldt, Heinz, deceased (by Bielfeldt, Gerlinde; by Bielfeldt, Karsten; and by Diehl, Christiane, heirs), to Sauer, J. P., & Sohn GmbH. Methods and apparatus for detachably assembling the barrel of a firearm. 3,834,053, Cl. 42-75.00b.
Bielfeldt, Karsten: *See—*
Bielfeldt, Heinz, deceased, 3,834,053.
Bieszczad, Edward S.; Wedmore, William R.; and Young, John S., to GTE Automatic Electric Laboratories, Incorporated. Control of operator position display. 3,835,466, Cl. 340-334.000.
Bilbro, James E.; and Johnson, Ben C. Jr., to Thermon Manufacturing Company. Pipe heat transfer assembly and method of making same. 3,834,458, Cl. 165-164.000.
Bills, Thomas L.; and Boni, Robert E. Reflection-type counter. 3,835,306, Cl. 235-92.0sb.
Binks Manufacturing Company: *See—*
Krohn, Duane D.; and Culbertson, Samuel W., 3,835,294.
Birch, Bonnie Alice. Brassiere construction. 3,834,397, Cl. 128-480.000.
Birkett, Ralph H. Magnetic game. 3,834,707, Cl. 273-126.00a.
Bishop, Thomas Desmond, to Deritend Engineering Company Limited, The. Stripping apparatus as used in the production of cardboard and like blanks. 3,834,291, Cl. 93-36.00a.
Bissada, Kadry K.: *See—*
Allison, Jean B.; Bissada, Kadry K.; and Peterson, Christine M., 3,834,122.
Bissada, Kardry K.; and Allison, Jean B., to Texaco Inc. Hydrocarbon trap. 3,834,130, Cl. 55-316.000.
Bissonette, Vernon L. Photographic elements containing color-providing layer units for amplification processes. 3,834,907, Cl. 96-74.000.
Bixby, Willard H., to American Device Manufacturing Company. Compartment door structure. 3,834,612, Cl. 232-25.000.
Black and Decker Manufacturing Company, The: *See—*
Abell, William David; and Sindelar, William Frank, 3,834,252.
Black, James A. Printing screen coating apparatus. 3,834,348, Cl. 118-323.000.
Black, Sivalls & Bryson, Inc.: *See—*
Ludwig, Gary Joe; and Wood, Loren E., 3,834,580.
Blackwell, John, to Du Pont de Nemours, E. I., and Company. Blue disperse 1,4-diaminoanthraquinone-2,3-dicarboximide dyes. 3,835,155, Cl. 260-326.00c.
Blasing, Elmer Paul, Jr., to Formica Corporation. Processing of a multiplicity of webs to enhance the manufacture of multicomponent laminates. 3,834,964, Cl. 156-269.000.
Blazewicz, Andrew J.; Piaskowski, Edward J.; and Wood, James F., to Babcock & Wilcox Company, The. Furnace seal. 3,834,328, Cl. 110-165.00r.
Blidung, Otto: *See—*
Schubert, Bernhard; and Blidung, Otto, 3,834,285.
Bliss, William W. Jogging gam apparatus. 3,834,702, Cl. 273-86.00b.
Blitch, James A. Engine intake air moisturizer. 3,834,360, Cl. 123-25.00a.
Bloch, Herman S., to Universal Oil Products Company. Preparation of polycyclic compounds. 3,835,197, Cl. 260-666.0py.
Bloch, Rupert: *See—*
Swoboda, Karl; Kulmburg, Alfred; and Bloch, Rupert, 3,834,947.
Block, Carol, to Block, Carol, Ltd. Method and apparatus for photepilation. 3,834,391, Cl. 128-303.100.
Block, Carol, Ltd.: *See—*
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Block, Dennis Howard, to RCA Corporation. Pulse width sensing circuit. 3,835,336, Cl. 307-234.000.
Bloom Engineering Company, Inc.: *See—*
Finke, Harry P.; Carr, Hugh B.; and Wilson, Carl D., 3,834,420.
Blosser, Robert L.; and Cranney, William D., to Sperry Rand Corporation. Microfiche storage and display unit. 3,834,799, Cl. 353-27.000.
Blue Valley Machine and Manufacturing Company: *See—*
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Blumle, Leo J.: *See—*
Ferrari, Andres; Blumle, Leo J.; and Bonar, Laurence C., 3,834,821.
Boccard, Madeleine. Method of making a precious metal postage stamp. 3,833,990, Cl. 29-412.000.
Bock, Nils Erik, to Morgardshammar AB. Optical gauge. 3,834,820, Cl. 356-164.000.
Bockstie, Lawrence G., Jr., to Corning Glass Works. Flameproof moisture-resistant coatings for electrical components. 3,834,938, Cl. 117-201.000.
Bodet, Pierre. Timepiece with automatic calendar. 3,834,151, Cl. 58-4.00a.
Boehringer, C. H. Sohn: *See—*
Ost, Walter; Thomas, Klaus; and Jerchel, Dietrich, 3,835,184.
Boelens, Harmannus: *See—*
Van Der Linde, Leendert; and Witteveen, Jan Gerardus, 3,835,192.
Boggild, Robert; and Dale, William L. Mounting and accessories for flexible pole. 3,834,695, Cl. 272-60.00a.
Bohnke, Ernest; and Jorgensen, Henning B. Culture Kit. 3,834,992, Cl. 195-139.000.
Boiko, Vily Arsentievich: *See—*
Kakhovsky, Nikolai Ivanovich; Vakulenko, Anatoly Nikolaevich; Zakharov, Leonod Stepanovich; Lipodaev, Vladimir Nikolaevich; Fartushny, Vladimir Grigorievich; Kakhovsky, Jury Nikolaevich; Boiko, Vily Arsentievich; Sidlin, Zinovy Abramovich; and Juschenko, Knstantin Andreevich, 3,835,289.
Bollerup, Johannes, to Anja Engineering Corporation. Memory device. 3,834,531, Cl. 209-74.00m.
Bommart, Patrick, to Acieries de Gennevilliers Anciens Etablissements C. Delachaux. Conductor rail mountings. 3,835,268, Cl. 191-32.000.
Bonar, Laurence C.: *See—*
Ferrari, Andres; Blumle, Leo J.; and Bonar, Laurence C., 3,834,821.
Bond, Donald Spencer, to RCA Corporation. Television communication system with time delay compensation. 3,835,253, Cl. 178-69.5dc.
Bond, Sam. Trenching attachment for a tractor or the like. 3,834,049, Cl. 37-86.000.
Bondarenko, Oleg Petrovich: *See—*
Paton, Boris Evgenievich; Lebedev, Vladimir Konstatinovich; Medovar, Boris Izrailevich; Latash, Jury Vadimovich; Bondarenko, Oleg Petrovich; Baglai, Vitaly Mikhailovich; Sidorenko, Mikhail Nikolaevich; Leibenzon, Semen Abramovich; Kaganovsky, Gary Petrovic; Altgauzen, Andrei Pavlovich; Nikolsky, Leonid Evgenievich; Gorynina, Zoya Alexandrovna; Safronova, Ljudmila Andreevna; Katsevich, Leonid Savvich; Volokhonsky, Lev Avramovich; Nikulin, Alexandr Alexandrovich; Artemiev, Vladimir Dmitrievich; Edemsky, Vladiir Mikhailovich; and Voronin, Georgy Alexandrovich, 3,835,227.
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Hettich, Alfred; and Stroezel, Reinhold, 3,834,468.
Hofmann, Eberhard; and Lehmann, Hartmut, 3,834,184.
Linder, Ernst; Adalbert, Gerhard; and Hess, Jurgen, 3,834,846.

Boss, Holm Diethard; and Butschek, Hans Albert, to Messerschmitt-Bolkow..Blohm GmbH. Method and device for electrohydraulic control of a hydraulic actuator. 3,834,279, Cl. 91-459.000.

Bothwell, Peter William. Handlebars. 3,834,249, Cl. 74-551.800.

Bottenbruch, Ludwig: *See—*
Verneleken, Hugo; Court, Otto; Bottenbruch, Ludwig; and Lippert, Axel, 3,834,441.

Bottoms, Clifford C., to Dresser Industries, Inc. Jarring tool. 3,834,471, Cl. 175-304.000.

Bourdolle, Henri M.; Lacroix, Serge R.; Fleury, Jean E.; Peuillot, Gilbert; and Pinot, Jean, to Regie Nationale des Usines Renault and Automobiles Peugeot. Electrochemical grinding methods and apparatus. 3,835,016, Cl. 204-224.00m.

Bourgeois, Joseph F.; and Grace, James M., to Amana Refrigeration, Inc. Trash compactor with-down means for trash container and liner. 3,834,299, Cl. 100-229.00a.

Bouton, Michael John; and Sikes, Bob L. Liquid and solid sensing device. 3,834,235, Cl. 73-293.000.

Boutsicaris, Stephen P.; and Hayes, Robert A., to Firestone Tire & Rubber Company, The. Butadiene resins and process for preparation. 3,835,075, Cl. 260-17.4bb.

Bow, William J., to Foster Wheeler Corporation. Direct contact condenser having an air removal system. 3,834,133, Cl. 55-257.000.

Bowen, Willard L., to Torrington Company, The. Fractured bearing race. 3,834,772, Cl. 308-196.000.

Bowers, Bernard P.; and Breidegam, Delight E., Jr., to East Penn Manufacturing Company , Inc. Battery holddown. 3,834,479, Cl. 180-68.500.

Boyd, William A. Holder for intravenous injection cannula and tubing. 3,834,380, Cl. 128-133.000.

Bozejovska, Libuse: *See—*
Zahradka, Pavel; Bozejovska, Libuse; and Dvorakova, Alena, 3,834,187.

Bozoyan, Edward. Digital counterposing actuators. 3,834,419, Cl. 137-625.630.

Bracha, Peretz; and Waitman, Arie, to Makhteshim Chemical Works Ltd. Cinnamanilides. 3,835,128, Cl. 260-240.00j.

Bracht, Karl Friedrich; Strube, Herbert A.; and Sacht, Hans Otto, to Welger, Gebruder. Pick-up baler, sprayer and compactor combination. 3,834,141, Cl. 56-341.000.

Brackin, Wayne L., to Dresser Industries, Inc. Transfer elevator for integral and collar tubing. 3,834,751, Cl. 294-104.000.

Bradshaw, Franklin C., to Kroy Industries Inc., mesne. Printing apparatus. 3,834,507, Cl. 197-6.700.

Brady, Thomas J.; Lawrence, Richard L.; Gonnella, Carmen J.; and Metzler, Gottfried, III, to Mennen Company, The. Bottle-closure structrue. 3,834,596, Cl. 222-520.000.

Brain Dust Patents Establishment: *See—*
Kuchler, Fritz, 3,834,259.
Kuchler, Fritz, 3,834,475.

Bramson, Mogens L.: *See—*
Tyson, William H., Jr.; and Bramson, Mogens L., 3,834,544.

Brandl, Karl, to Lonza Ltd. Method of forming plastic sandwich structures. 3,834,932, Cl. .

Brandon, Paul W.: *See—*
Takewell, Robert B.; Brandon, Paul W.; and Odom, Paul R., 3,834,850.

Brasfield, Steven H., Sr.: *See—*
Searight, Charles E.; Brasfield, Steven H., Sr.; and McCraney, Thomas E., 3,835,087.

Brauer, Dennis R., to Olin Corporation. Process and apparatus for predicting the tool wear characteristics of metal sheet. 3,834,219, Cl. 73-7.000.

Braun Aktiengesellschaft: *See—*
Roth, Johann; and Grimm, Werner, 3,834,797.

Braun, Frank R.: *See—*
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Breidegam, Delight E., Jr.: *See—*
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Bremaud, Claude R., to Societe Anonyme dite: Societe Europeenne de. Submarine reservoirs. 3,834,337, Cl. 114-16.00e.

Breslow, Jeffrey D.; and Jaworski, Eugene, to Glass, Marvin, & Associates. Doll carrying a marking means and accessory with movable marking surface. 3,834,070, Cl. 46-116.000.

Breslow, Jeffrey D., to Glass, Marvin, & Associates. Game device with illuminable playing positions. 3,834,711, Cl. 273-141.00a.

Brett, James E., to Purex Corporation, Ltd. High throughput filter having multiposition valve. 3,834,537, Cl. 210-136.000.

Brichard, Edgard, to Glaverbel S.A. Control of currents in glass drawing kiln. 3,834,975, Cl. 161-1.000.

Brickner, Kenneth G.; and Stanley, Edward B., to United States Steel Corporation. Ductile, weldable high-strength-steel wire and method for producing same. 3,834,948, Cl. 148-2.000.

Bridges, Robert E., to Eastman Kodak Company. Inspection apparatus for detecting defects in a web. 3,835,332, Cl. 250-563.000.

Brietbach, Elmar. Solid-borne sound transducers. 3,835,427, Cl. 335-231.000.

Briscoe, William G., to United States of America, Army. Sequential automatic gain control circuit. 3,835,400, Cl. 328-168.000.

Briskin, Theodore S.; Schnautz, Norman G.; and Sabherwal, Inderjit, to Sutton Research Corporation. Smokable substitute material. 3,834,398, Cl. 131-2.000.

British Steel Corporation: *See—*
Lapper, Maurice Noel, 3,834,262.
Reed, Geoffrey Ronald, 3,834,637.

British Visqueen Limited: *See—*
Pickford, Nigel Evans; and Daerds, Henry Charles, 3,834,528.

Brnadberg, Lawrence C.: *See—*
Gades, Larry D.; Brnadberg, Lawrence C.; and Gorman, Roger A., 3,835,280.

Broad, Frank Alfred, to Angus, George & Company, Limited. Shaft seals. 3,834,717, Cl. 277-134.000.

Brock, James Donald; and Mize, Erbie Gail, to Astec Industries, Inc. Storage bin with flow control sealing apparatus. 3,834,595, Cl. 222-504.000.

Brodbeck, Helmut, to Efka-Werke Fritz Kiehn GmbH. Apparatus for sorting rod-like articles. 3,834,583, Cl. 221-251.000.

Broisman, Raymond, to American Cyanamid Company. Adhesion of fibrous material to rubber. 3,834,934, Cl. 117-76.00t.

Broling, Keith W.: *See—*
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Brooks, Robert E., Jr.: *See—*
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Brown & Root, Inc.: *See—*
Abbott, Phillip Andrew, 3,834,169.

Brown, Alexander M., to Sherwood Medical Industries, Inc. Breech loaded syringe with deformable piston. 3,834,387, Cl. 128-218.00p.

Brown, Boveri & Company Ltd.: *See—*
Faber, Guy; and Maggi, Carlo, 3,834,833.

Brown, David, Tractors Limited: *See—*
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Brown Engineering Company, Inc.: *See—*
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Brown, Glenn M.: *See—*
Swis, Philip E.; Labeau, Russell; and Brown, Glenn M., 3,834,221.

Brown, Morton; Hoeschele, Guenther Kurt; and Witsiepe, William Kenneth, to Du Pont de Nemours, E. I., and Company. Process for improving thermoplastic elastomeric compositions. 3,835,098, Cl. 260-75.00n.

Brown, Paul L. Hand manipulated toy. 3,834,069, Cl. 46-51.000.

Brownscombe, Philip J., to Dietzgen Corporation. Projector viewer with indicating device. 3,834,800, Cl. 353-27.000.

Bru, Michel, to Ets J.J. Carnaud & Forges de Basse-Indre. Pneumatic elevator for lifting a sheet of material. 3,834,558, Cl. 214-1.0bt.

Brudy, Peter E., to Dominion Auto Accessories Limited. Reflecting device. 3,834,789, Cl. 350-97.000.

Brumlik, George C. Self-adhering fastening filament. 3,833,972, Cl. 24-24.000.

Brun, Andre; Jaffe, Albert; and De Panafieu, Philippe, to Subsea Equipment Associates Limited (Seal). Well-head assembly. 3,834,460, Cl. 166-.500.

Brun, Robert; and Pages, Michel, to Rhone-Poulenc S.A. Semi-permeable tubular assembly. 3,834,546, Cl. 210-321.000.

Brunswick Corporation: *See—*
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Bryant, William S.: *See—*
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Buckbee-Mears Company: *See—*
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Buckwalter, Leonard, 25% to Reens, Louis H. Temperature setback control. 3,834,618, Cl. 236-46.000.

Budd Company, The: *See—*
Bennington, Russell J.; and Szalay, Laszlo G., 3,834,555.

Budych, Irvin; Frey, La Verne Lawrence; and Reefman, William Edward, to Bunker Ramo Corporation, The. Method of adjusting frequency of vibrator structure. 3,833,999, Cl. 29-407.000.

Buhrke, Rolfe E.: *See—*
Wilber, John A.; Rice, Verner K.; and Buhrke, Rolfe E., 3,835,312.

Bullinger, David John. Trailer auxiliary hydraulic brake system. 3,834,767, Cl. 303-7.000.

Bundschuh, John J.; and Goddard, William H. Viewing screen for motion picture projectors. 3,834,798, Cl. 352-104.000.

Bunker Ramo Corporation: *See—*
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Bunker Ramo Corporation, The: *See—*
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Burchett, Paul James. Strand tension indicator. 3,834,225, Cl. 73-144.000.

Burg, Karlheinz; Hermann, Hans Dieter; and Schlaf, Helmut, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Process for the preparation of aqueous polyoxymethylene dispersions. 3,835,080, Cl. 260-29.20r.

Burg, Robert J.; Lieberman, Milton; and Fiorenza, Armand A., said Lieberman assor. to Tube, Gordon, Products Company, Inc. Structural system. 3,834,549, Cl. 211-148.000.

Burke, Noel I.; and Coleman, Harold R., to Tee-Pak, Inc. Preparation of viscose. 3,835,113, Cl. 260-216.000.

Burke, Oliver W., Jr. High polymer latices and methods and means for producing same. 3,835,061, Cl. 252-359.00a.

Burke, Raymond William, to Beckman Instruments, Inc. Mechanical positioning device for precisely determining a series of mechanical locations. 3,834,243, Cl. 74-33.000.

Burkett, Jamie L. Portable overhead post and rail splitter. 3,834,436, Cl. 144-326.00r.

Burkin, Jury Alexandrovich; and Seleznev, Jury Emelyanovich. Device for making digit winding loops in memory storage matrices. 3,833,994, Cl. 29-203.0mm.

Burr, Robert Page; and Keogh, Raymond J., to Photocircuits Corporation. Method of making laminated wire wound/armatures. 3,834,014, Cl. 29-598.000.

Burroughs Corporation: *See—*
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Burylo, Piotr Stanislaw: *See—*
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Butler, Albert O., to Dart Industries, Inc. Pressure seal assembly. 3,834,715, Cl. 277-1.000.

Butsch, Richard L., to General Electric Company. Plastic tub wall alignment for dishwashing rack mounting. 3,834,784, Cl. 312-350.000.

Butschek, Hans Albert: *See—*
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Byrnes, Ed: *See—*
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Cachat, John F., to Park-Ohio Industries, Inc. Method of reclaiming iron from ferrous dust. 3,834,895, Cl. 75-11.000.

Cahnman, Hugo, Associates, Inc.: *See—*
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Cahnman, Hugo N.; Sterne, Frank; and Canfield, Douglas M., to Cahnman, Hugo, Associates, Inc. Method of bulking and heat-setting yarn. 3,833,975, Cl. 28-72.100.

Caione, Vincenzo. Fuse holder. 3,835,432, Cl. 337-247.000.

Caire, Roger, to Societe d'Exploitation d'Outillage et Usinage de Precision Georges Froquet sigle S.E.O.U.P. Shears. 3,834,020, Cl. 30-228.000.

Cairns, Malcolm, Anthony: *See—*
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Caldwell, Melvin R.: *See—*
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California Institute of Technology: *See—*
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Yariv, Amnon; and Gover, Avraham, 3,835,407.

Caliri, Charles Thomas, to Cincinnati Milacron Inc. Torque couple with structure borne noise isolation. 3,834,248, Cl. 74-443.000.

Callaham, John E.: *See—*
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Cam Gears Limited: *See—*
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Camas, George: *See—*
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Campbell, Rouel R. Epicyclic camera. 3,834,788, Cl. 352-84.000.

Campbell, Wallace Clealon, Jr.: *See—*
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Canada Wire and Cable Limited: *See—*
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Canadian Patents and Development Limited: *See—*
Ritcey, Gordon Malcolm; and Lucas, Bernard Henry, 3,835,213.

Canaiy, Peter G. Label printing. 3,834,302, Cl. 101-69.000.

Candellero, Giovanni; and Aimo, Stefano, to FIAT Societa per Azioni. Clutch, brake and motor controls for synchronized gear shifting. 3,834,499, Cl. 192-.090.

Cane, Albert: *See—*
Dunn, Ralph; Ayton, Ian F.; Cane, Albert; Collins, Harold B.; Lewis, J. Stephen; Morris, Joseph P.; and Shapero, Wallace H., 3,834,974.

Canfield, Douglas M.: *See—*
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Canon Kabushiki Kaisha: *See—*
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Komine, Yoshio, 3,834,796.
Takahashi, Isao; Fujii, Motoharu; Kawakubo, Kazuo; Ariga, Masao; and Sugiura, Susumu, 3,834,808.
Tsukada, Syusei, 3,834,803.
Tsukada, Syusei, 3,835,355.

Cara, Jean-Francois, to Industrialisation Rationnille du Batiment IRBA GP. Structural clip. 3,834,112, Cl. 52-760.000.

Carborundum Company, The: *See—*
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Carey, Loren E.: *See—*
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Carissimi, Vincent L.: *See—*
Gartland, Albert J., Jr.; Carissimi, Vincent L.; and Riley, George A., 3,835,437.

Carleson, Bengt Jonas Timoteus, to Telefonaktiebolaget L.M. Ericsson. Adjustable equalizing network. 3,835,411, Cl. 330-31.000.

Carlin, Joseph T.; and Allen, Joseph C., to Texaco Inc. Tertiary recovery operation. 3,834,461, Cl. 166-245.000.

Carlsen, W. John, to General Telephone & Electronics Laboratories, Incorporated. Method and apparatus for recording and projecting holograms. 3,834,786, Cl. 350-3.500.

Carlson, Carl H.; and Slaker, Frank A., to Outboard Marine Corporation. Aerating machine. 3,834,464, Cl. 172-22.000.

Carlson, Richard E.: *See—*
Wolfe, Robert W.; and Carlson, Richard E., 3,834,010.

Carlson, Richard G., to Allis-Chalmers Corporation. Wheel slippage sensing control for a vehicle. 3,834,481, Cl. 180-82.00r.

Carpenter, David B.; and Mittendorf, Jane W., to Ashland Oil, Inc. Sulfonated aromatic product and method of manufacturing the same. 3,835,183, Cl. 260-505.00c.

Carpino, Louis A.; and Han, Grace Y., to Research Corporation. 9-Fluorenylmethanol haloformates, carbonates and thiocarbonates. 3,835,175, Cl. 260-463.000.

Carr, George W., to Pullman Incorporated. Container front end construction. 3,834,575, Cl. 220-1.500.

Carr, Harry A. Keeper for socket wrenches. 3,834,253, Cl. 81-125.000.

Carr, Hugh B.: *See—*
Finke, Harry P.; Carr, Hugh B.; and Wilson, Carl D., 3,834,420.

Carr, John B.; Haynes, George R.; Albert, James R.; and Kodama, Jiro K., to Shell Oil Company. Morpholino-piperazinyl pyrimidines. 3,835,132, Cl. 260-247.50d.

Carroll, Charles D.; and Meginnis, George B., to General Motors Corporation. Method of making a porous laminated seal element. 3,834,001, Cl. 29-414.000.

Carter, B. & F. & Co. Limited: *See—*
Hinds, Ronald; and Akister, James Martin, 3,834,271.

Casanovas, Lorenzo Puig; and Vellas, Jean Leon Justin, to Societe d'Etudes et de Diffusion de Procedes et Brevets S.A. Apparatus for the treatment by metallic ions of aqueous liquids. 3,835,018, Cl. 204-228.000.

Case, J. I., Company: *See—*
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Casey, John William. Pipe pushing apparatus. 3,834,668, Cl. 254-29.00r.

Cassens, Nicholas, Jr.: *See—*
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Caterpillar Tractor Company: *See—*
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Catlett, John C., to Gyro Tech Incorporated. Automatic sliding door system. 3,834,081, Cl. 49-360.000.

Cellu Products Company: *See—*
Doll, Brendan L., 3,834,969.

Cenco Medical/Health Supply Corporation: *See—*
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Centre d'Etudes et de Recherches de l'Industrie des Liants Hydrauliques: *See—*
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Centre Technique Industriel dite: Institut Textile de France: *See—*
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Bazant, Erich; Cerjak, Horst; and Scholz, Manfred, 3,834,740.

Cesca, Sebastiano; Arrighetti, Sergio; and Marconi, Walter, to Snam Progetti S.p.A. Curable, amorphous, olefinic terpolymers from alphamono olefins and polyenes. 3,835,104, Cl. 260-80.780.

Ceskoslovenska adademie ved: *See—*
Novosad, Jan; Bazant, Vladimir; Smid, Vlastimil; and Majzlik, Ratibor, 3,834,624.

Chadsey, Carl T., Jr.: *See—*
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Chance, A.B., Company: *See—*
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Chandler, Earl E. Agricultural apparatus for irrigation purposes. 3,834,466, Cl. 172-235.000.

Chang, Marguerite S.: *See—*
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Chang, Yun Feng: *See—*

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Chavenel, Hubert: *See—*
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Checchett, Maurizio. Device for electronically detecting pressure changes in a fluid. 3,835,316, Cl. 250-231.00p.

Chemetron Corporation: *See—*
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Chen, Chao C.; and Du Fort, Edward C., to Hughes Aircraft Company. Optical limited scan antenna system. 3,835,469, Cl. 343-754.000.

Cheng, Chia-Chung: *See—*
Zee-Cheng, Kwang Yuen; and Cheng, Chia-Chung, 3,835,140.

Cheng, Wai Ming; Davies, James Francis; and Pethica, Brian Anthony, to Lever Brothers Company. Anti-bacterial detergent bar. 3,835,057, Cl. 252-107.000.

Cherdron, Harald; Fischer, Edgar; and Muck, Karl Friedrich, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Light degradable thermoplastic molding composition based on polyacetals. 3,835,096, Cl. 260-67.0fp.

Cherednik, Nina Fedorovna: *See—*
Kaljuko, Alexei Yakovlevich; Simkhovich, Fridrikh Levikovich; Cherednik, Nina Fedorovna; Pravednaya, Ljudmila Dmitrievna; Kasakov, Alexei Mikhailovich; Saposhkov, Alexandr Mikhailovich; and Lischinsky, Anri Iosifovich, 3,835,250.

Cherian, Gabriel B., to Sperry Rand Corporation. Toner replenisher with manual adjustment of dispensing rate. 3,834,592, Cl. 222-277.000.

Cherne Industrial, Inc.: *See—*
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Chesla, Thomas E., to Philco-Ford Corporation. Apparatus for supporting cathode heaters. 3,835,344, Cl. 313-273.000.

Chesnot, Bernard Francois Gustave, to Les Condensateurs Sic-Safco. Electrolytes for low series-resistance, aluminum electrolytic capacitors. 3,835,055, Cl. 252-62.200.

Chiappetti, Pietro, 20% to Lee, Raymond, Organization, Inc., The. Bicycle. 3,834,734, Cl. 280-261.000.

Chichester, Willard L.: *See—*
Holtkamp, Donald A.; Chichester, Willard L.; and Rabbitt, Robert R., 3,834,569.

Chien, Chiu-Ying Wong. Dental floss holder apparatus. 3,834,404, Cl. 132-91.000.

Chierici, Osvaldo F., to Holland Company. Uncoupling lever for railroad cars with standard draft gear cushioning. 3,834,554, Cl. 213-166.000.

Chin, Jimmy K. Plated coins. 3,834,879, Cl. 29-191.000.

Chisholm, Andrew Alexander: *See—*
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Chromax Limited: *See—*
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Chugai Seiyaku Kabushiki Kaisha: *See—*
Shindo, Minoru; Kakimoto, Morio; Nagano, Hiroyuki; and Fujimura, Yasuo, 3,835,125.

Church, Donald E., to Tyrechek, Inc., mesne. Pulse stretcher for a receiver of a pneumatic tire low pressure monitoring and warning system. 3,835,451, Cl. 340-58.000.

Ciambrone, David, to Cubic Corporation. Waste water treatmant system. 3,835,039, Cl. 210-17.000.

Ciba-Geigy AG: *See—*
Oxe, Josef; and Keller, Rudolf, 3,835,148.

Ciba-Geigy Corporation: *See—*
Howarth, Graham Arton; and Hoyle, William, 3,835,165.
Kristiansen, Odd, 3,835,173.
Kristiansen, Odd, 3,835,174.
Renfroe, Harrris Burt, 3,835,149.
Woodard, Robert Burns, 3,835,130.

Cincinnati Milacron Inc.: *See—*
Caliri, Charles Thomas, 3,834,248.
Matson, Chares Bernard, 3,834,088.

Cincinnati Mine Machinery Co., The: *See—*
Krekeler, Claude B., 3,834,764.

Cipriani, Cipriano: *See—*
Rothwell, Ronald Edward; Cipriani, Cipriano; and Rush, Julian Lee, 3,834,977.

Cities Service Oil Company: *See—*
King, Jack A., 3,835,049.

Claessens, Pierre Leon: *See—*
Dudley, Michael Alan; and Claessens, Pierre Leon, 3,835,005.

Clairol, Incorporated: *See—*
Walter, Henry J.; Kronheim, John H.; and Levine, Harvey, 3,835,292.

Clancy, James Roger, to Simon, Henry, Limited. Control valve. 3,834,418, Cl. 137-625.480.

Clark, Danford E.: *See—*
Ward, John W.; and Clark, Danford E., 3,835,028.

Clark Equipment Company: *See—*
Holtkamp, Donald A.; Chichester, Willard L.; and Rabbitt, Robert R., 3,834,569.

Clark, Harold V.: *See—*
Rose, Marshall G., Jr.; and Clark, Harold V., 3,834,648.

Clark, Merle M.: *See—*
Krippene, Brett C.; Clark, Merle M.; and Triffon, Apostol, 3,834,858.

Clark, Robert L.: *See—*
Witzel, Bruce E.; Shen, Tsung-Ying; Graham, Patricia M.; Clark, Robert L.; and Pessolano, Arsenio A., 3,835,143.

Clarke, Clarence C., to Whirlpool Corporation. Refrigerator evaporator construction. 3,834,176, Cl. 62-276.000.

Clarke, Dennis E., to Lockheed Aircraft Corporation. Electrical connector assembly for power distribution system. 3,835,440, Cl. 339-22.00b.

Clarke, Ewart C.; and Glew, David N., to Dow Chemical Company, The. Aqueous organic heat-sink fluids. 3,834,456, Cl. 165-104.000.

Clarke, Geoffrey, to Square D Company. Timing attachment for a relay. 3,835,352, Cl. 317-130.000.

Clavin, Edward A.; Wheeler, Lionel H.; Brooks, Robert E., Jr.; and Campbell, Wallace Clealon, Jr., to CRC-Crose International, Inc. Pipe bending system. 3,834,210, Cl. 72-308.000.

Clayton Manufacturing Company: *See—*
Arant, Perry, 3,834,355.

Clement, Carl J.: *See—*
Ball, Richard B.; Gurler, Tuygan; Clement, Carl J.; and Horine, David A., 3,834,041.

Cleveland Hardward & Forging Co.: *See—*
Slovensky, Mike J., Jr., 3,834,747.

Cleveland, Joseph J.; and Fritsch, Carl W., Jr., to GTE Sylvania Incorporated. Fine grain translucent alumina. 3,834,915, Cl. 106-73.400.

Cliffton, Ethan W.; and Culligan, Matthew J. Collapsible support unit for a garment bag or the like. 3,834,548, Cl. 211-118.000.

Coates, Richard H. Propping device for outdoor stoves. 3,834,745, Cl. 292-339.000.

Cochran, Stanley Robert; and Johnson, Melvin Harry, to Du Pont de Nemours, E. I., and Company. Process for texturing yarn by gear crimping. 3,833,976, Cl. 28-72.150.

Coe, Roger Frank; and Lumby, Roland John, to Lucas, Joseph, Industries, Limited. . 3,835,211, Cl. 264-66.000.

Coffin, Harry S., to Control Valve Corporation. Printed circuit card component removal apparatus. 3,834,605, Cl. 228-20.000.

Cole National Corporation: *See—*
Richens, Robert H.; and Garner, Charles A., 3,834,688.

Coleman Company, Inc., The: *See—*
James, Larry S., 3,834,856.

Coleman, Harold R.: *See—*
Burke, Noel I.; and Coleman, Harold R., 3,835,113.

Colin, Pierre, to Produits Chimiques Ugine Kuhlmann. Method for treating solutions containing cyanohydrins. 3,835,047, Cl. 210-63.000.

Collins, Dennis William, to Steeper, Hugh, (Roehampton) Limited. Pivoted artificial limb with spring loaded joint lack. 3,833,942, Cl. 3-12.300.

Collins, Harold B.: *See—*
Dunn, Ralph; Ayton, Ian F.; Cane, Albert; Collins, Harold B.; Lewis, J. Stephen; Morris, Joseph P.; and Shapero, Wallace H., 3,834,974.

Collins, Johnnie C., to Servis Equipment Company. Earth working implement lift assembly. 3,834,465, Cl. 172-197.000.

Colombo, Paolo; and Galliverti, Marco, to Societa Italiana Resine S.I.R. S.p.A. Process for the preparation of catalysts for the polymerisation and copolymerisation of ethylene. 3,835,065, Cl. 252-429.00c.

Colonial Metals, Inc.: *See—*
Davies, Ronald F.; and Benvegno, George J., 3,835,066.

Columbia Broadcasting System, Inc.: *See—*
Bauer, Benjamin B., 3,835,255.

Columbia Pictures Industries, Inc.: *See—*
Rooks, Earnest F.; and Lewis, David E., 3,835,387.

Colyer, Steve: *See—*
Hunter, Roland L., 3,834,656.

Comas, Jorge Rectoret. Spring loaded pattern drum for ease of pattern jack insertion. 3,834,188, Cl. 66-50.00b.

Commissariat a l'Energie Atomique: *See—*
Costes, Didier, 3,834,452.

Commonwealth Scientific and Industrial Research Organization: *See—*
Hodgkin, Jonathan Howard; Hawthorne, David Geoffrey; Swift, Jean Drummond; and Solomon, David Henry, 3,834,923.

Communications Patents Limited: *See—*
Smart, Daniel Henry, 3,835,244.

Compagnie Electro Mecanique: *See—*
Laronze, Joseph, 3,835,339.

Compagnie Francaise de Raffinage: *See—*
Van Den Berghe, Paul; and Tannenberger, Helmut, 3,834,943.

Comstock & Wescott, Inc.: *See—*
Aspinwall, Peter, 3,834,582.

Congleton, Wayne, to Dolco Packaging Corporation. Container assembly having compartments and means for stacking container blank. 3,834,609, Cl. 229-28.00r.

Congoleum Industries, Inc.: *See—*
Piacente, Anthony N., 3,835,212.

Consarc Corporation: *See—*
Luchok, John; and Wooding, Patrick J., 3,834,447.

Consolidated Novelty Co., Inc.: *See—*
Mottel, Alan, 3,834,976.

Continental Disc Corporation: *See—*
Solter, Robert L.; and Hansen, Franklin A., 3,834,581.

Continental Gummi-Werke Aktiengesellschaft: *See—*
Specht, Hans; Kroll, Bruno; and Gruttner, Alfred, 3,834,518.

Continental Oil Company: *See—*

McGuire, Stephen E.; Stauter, John C.; and Kennedy, Carl D., 3,834,533.

Control Building Systems, Inc.: *See—*
Lowery, William E.; and Jennings, Roger G., 3,834,967.

Control Data Canada, Ltd.: *See—*
McDonald, George B., 3,834,222.

Control Techniques Corporation: *See—*
Stolarik, Eugene, 3,835,273.

Control Valve Corporation: *See—*
Coffin, Harry S., 3,834,605.

Conway, Bernard W.; and Moran, James, to Dexter, C. H., & Sons, Inc. Process of forming wet laid tufted nonwoven fibrous web from a viscous fibrous dispersion and product. 3,834,983, Cl. 162-168.000.

Conwed Corporation: *See—*
Astedt, George; and Benasutti, Roger, 3,834,106.

Cook, Cleo E.: *See—*
Jones, Dana C.; Cook, Cleo E.; and Murray, Alfred K., 3,834,175.

Cook, Neal A.; and Friedenfeld, Gerard. Vehicle space closing means. 3,834,752, Cl. 296-1.00s.

Cook, Reginald Kenneth; and Burylo, Piotr Stanislaw. Fluid-cooled nuclear reactor. 3,834,987, Cl. 176-59.000.

Cook, Sanford L.: *See—*
Wilder, Charles M. G.; and Cook, Sanford L., 3,834,101.

Cooke, H. Sherwood: *See—*
Grossel, Stanley S.; Cunninghame, Andrew L.; and Cooke, H. Sherwood, 3,835,314.

Cooksley, Ralph D. Heat transfer method and apparatus. 3,834,448, Cl. 165-1.000.

Coons, John D.: *See—*
Orloff, Lawrence; De Ris, John N.; and Coons, John D., 3,834,462.

Coontz, David: *See—*
Shubb, Richard; and Coontz, David, 3,834,267.

Cooper, Edwin & Company Limited: *See—*
Elliott, John Scotchford; Jayne, Gerald John Joseph; and Folliard, Patrick James, 3,835,202.

Corbin, Dennisis: *See—*
Schwall, Donald V.; Rogers, Alan B.; and Corbin, Dennisis, 3,835,223.

Corning Glass Works: *See—*
Baum, George; and Lynn, Merill, 3,835,011.
Bockstie, Lawrence G., Jr., 3,834,938.
Grossman, David G.; and Rittler, Herman L., 3,834,981.
Zine, Anthony R., Jr., 3,834,526.

Corometrics Medical Systems, Inc.: *See—*
Abbenante, Thomas J., 3,835,455.

Corporation: *See—*
Rutledge, James E., 3,835,225.

Costes, Didier, to Commissariat a l'Energie Atomique and Electricite de France (Service National). Removable head pressure vessel, especially for boiling-water reactors. 3,834,452, Cl. 165-47.000.

Coumans, Harry Maria: *See—*
Hemming, Raymond Charles; and Coumans, Harry Maria, 3,834,504.

Coupal, Bernard: *See—*
Lalancette, Jean Marc; and Coupal, Bernard, 3,835,042.

Court, Frederick Charles, to United Kingdom of Great Britain and Northern Ireland, Secretary of State for Defence in Her Britannic Majesty's Government of the. Binary data communication apparatus. 3,835,386, Cl. 325-50.000.

Court, Otto: *See—*
Vernaleken, Hugo; Court, Otto; Bottenbruch, Ludwig; and Lippert, Axel, 3,834,441.

Coutin, Bernard: *See—*
Sekiguchi, Hikaru; Rapacoulia, Panayota; and Coutin, Bernard, 3,835,100.

Cowan, Larry Clyde, to Leesona Corporation. Fluid circuit indicator. 3,834,346, Cl. 116-70.000.

Cox, Calvin Howard, to Bell-Fruit Manufacturing Company Limited. Gaming machine with comparison of randomly determined and player preselected symbols. 3,834,712, Cl. 273-143.00r.

Cox, Raymond E.: *See—*
Ehrlich, Robert M.; and Cox, Raymond E., 3,835,111.

Cozens, John Ritchie: *See—*
Holmes, Andrew James Timothy; and Cozens, John Ritchie, 3,835,343.

CPE Industries, Inc.: *See—*
Rauch, Richard A.; Camas, George; and Shulman, Elliott, 3,834,521.

Craft Camera Corporation: *See—*
Rathburn, Paul, 3,834,811.

Cranney, William D.: *See—*
Blosser, Robert L.; and Cranney, William D., 3,834,799.

CRC-Crose International, Inc.: *See—*
Clavin, Edward A.; Wheeler, Lionel H.; Brooks, Robert E., Jr.; and Campbell, Wallace Clealon, Jr., 3,834,210.

Creusot-Loire: *See—*
Ancelle, Bernard; and Lejeune, Pierre, 3,834,869.

Crigger, Clarence J.; and Arbogast, Ralph S. Snow and ice anti-skid devices for shoes. 3,834,045, Cl. 36-7.600.

Crimmins, Arthur G., to All American Industries, Inc. Air cushion pallet. 3,834,556, Cl. 214-1.0be.

Critchlow, Ezra F.: *See—*
Strasburg, Richard N.; and Critchlow, Ezra F., 3,834,181.

Critchlow, Philip R.; and Zeitlin, Bruce A. Multi-filament composite superconductor with transposition of filaments. 3,835,242, Cl. 174-126.0cp.

Crofford, Tommy R., to Telex Computer Products, Inc. Data pulse width measurement circuit. 3,835,383, Cl. 324-186.000.

Croquelois, Jean-Pierre; Erskine, William; and Gerber, Raymond, to Battelle Memorial Institute. Process and device for non-impact printing with liquid ink. 3,834,301, Cl. 101-1.000.

Crosby, Edward L. Jr., to United States of America, Air Force. Tethered balloon refueling system. 3,834,655, Cl. 244-135.00r.

Cross Company, The: *See—*
Swis, Philip E.; Labeau, Russell; and Brown, Glenn M., 3,834,221.

Crosser, Ralph W., Jr.: *See—*
Peterson, Thomas D.; and Crosser, Ralph W., Jr., 3,834,534.

Crouse, David J.: *See—*
Hurst, Fred J.; and Crouse, David J., 3,835,214.

Crow, Gerald W. Method and apparatus for separating wood bark from gravel. 3,834,561, Cl. 241-24.000.

Cubic Corporation: *See—*
Ciambrone, David, 3,835,039.

Culbertson, Samuel W.: *See—*
Krohn, Duane D.; and Culbertson, Samuel W., 3,835,294.

Culligan, Matthew J.: *See—*
Cliffton, Ethan W.; and Culligan, Matthew J., 3,834,548.

Cultrera, Salvatore J. Emergency V-belt for vehicles. 3,834,245, Cl. 74-231.00j.

Cummins, Stewart E.: *See—*
Luke, Theodore E.; and Cummins, Stewart E., 3,835,459.

Cunninghame, Andrew L.: *See—*
Grossel, Stanley S.; Cunninghame, Andrew L.; and Cooke, H. Sherwood, 3,835,314.

Cupper, Robert A.; and Somekh, George S., to Union Carbide Corporation. Thermally stable lubricants for external combustion engines. 3,834,166, Cl. 60-651.000.

Curry, John L. Method for making curved tubes. 3,833,985, Cl. 29-157.00a.

Cutler, John Frederick; Edwards, Robert Andrew; and Sarle, Charles Richard, to Wallace-Murray Corporation. Engine turbochargins system with vented compressor bearing. 3,834,156, Cl. 60-59.00t.

Cutler-Hammer Inc.: *See—*
Edden, Francis E.; and Engeman, Joseph P., 3,835,378.

Cutter Laboratories, Inc.: *See—*
Tyson, William H., Jr.; and Bramson, Mogens L., 3,834,544.

Dade Reagents, Inc.: *See—*
Jones, Alan Richardson, 3,834,411.

Daerds, Henry Charles: *See—*
Pickford, Nigel Evans; and Daerds, Henry Charles, 3,834,528.

Daichi Kogyo Seiyaku Kabushiki Kaisha: *See—*
Iwai, Takatsugu; and Takeda, Hiroshi, 3,834,931.

Daikin Kogyo Kabushiki Kaisha: *See—*
Aiso, Hiroshi; Hirose, Tatsuya; and Kato, Kazuhisa, 3,834,996.

Dainichi-Nippon Cables, Ltd.: *See—*
Fujita, Hideo; Ishitobi, Masami; Suga, Hiroyoshi; Itohara, Fukuo; Matsushita, Michiharu; and Yamamoto, Hiroshi, 3,835,006.

Daiwa Boseki Kabushiki Kaisha: *See—*
Sakurai, Waichi; Igarashi, Takeshi; and Yuasa, Osamu, 3,834,148.

Dale, William L.: *See—*
Boggild, Robert; and Dale, William L., 3,834,695.

D'Alerta, Rolando Mario. Carburetion attachment for auxiliary air. 3,834,367, Cl. 123-124.00r.

Daley, Daniel R., to Penetryn Products, Inc. Packer for sealing pipe leaks. 3,834,421, Cl. 138-97.000.

Dalton, Ronald James: *See—*
Fairweather, John Anthony; and Dalton, Ronald James, 3,835,037.

Daly, Paul C. Device for monitoring earthmoving. 3,834,037, Cl. 33-292.000.

Damon Corporation: *See—*
Ferrari, Andres; Blumle, Leo J.; and Bonar, Laurence C., 3,834,821.

Daneck, David A.: *See—*
Smeltzer, Paul; and Daneck, David A., 3,834,019.

Danfoss A/S: *See—*
Arff, Heino, 3,834,165.

Danieli, Luigi. Equipment for conveying smokes and products of the combustion in a smelting furnace. 3,834,293, Cl. 98-36.000.

Daniels, Dennis, to US Amada, Ltd. Method of manufacturing multiple parts from a workpiece. 3,834,211, Cl. 72-324.000.

Danree, Bernard: *See—*
Malen, Charles; Danree, Bernard; and Pascaud, Xavier, 3,835,141.

D'Antonio, Nicholas F., to General Electric Company. Digitally controlled phase shift network. 3,835,397, Cl. 328-155.000.

Darlinger, Edward P.; Downs, William; and Stewart, Jack F. Absorption optimization apparatus. 3,834,129, Cl. 55-242.000.

Dart Industries, Inc.: *See—*
Butler, Albert O., 3,834,715.

Dattilo, Anthony J.; and Zegafuse, Donald W. Jr., to International Business Machines Corporation. Scanning light synchronization system. 3,835,249, Cl. 178-7.600.

Daughenbaugh, Raymond S.; Simon, Lewis B.; and Braun, Frank R., to United States of America, Navy. Floatable, telescoping, transportable shelter. 3,833,954, Cl. 9-1.00r.

Daugherty, Donald E.: *See—*
McClellan, Amos E.; and Daugherty, Donald E., 3,834,780.

Davenport, Lonnie R. Apparatus and method for mending knit fabric. 3,834,185, Cl. 66-1.00r.

Davidson, Alan John: *See—*
George, Edwin Francis; and Davidson, Alan John, 3,834,888.

Davies, James Francis: *See—*
Cheng, Wai Ming; Davies, James Francis; and Pethica, Brian Anthony, 3,835,057.

Davies, Ronald F.; and Benvegno, George J., to Colonial Metals, Inc. Catalytic mixture. 3,835,066, Cl. 252-429.00r.

Davis, Francis E., Jr.; Derr, Walter R.; and Ginter, Earle F., to Mobil Oil Corporation. Regeneration of halogen promoted bimetallic reforming catalyst. 3,835,063, Cl. 252-415.000.

Davis, Hugh J.: *See—*
Lerner, Irwin S.; Davis, Hugh J.; and Earl, Thad J., 3,834,378.

Davis, James E. P.: *See—*
Weigl, James; and Davis, James E. P., 3,834,383.

Dawdowicz, Jan; and Ferraro, Frank A., to Warner-Lambert Company. Dispensing system for razor blade cartridges. 3,834,018, Cl. 30-40.200.

Dawley, Richard H.: *See—*
Larson, Clarence E.; Dawley, Richard H.; and Reese, Roger H., 3,834,568.

Dawson & Usher Limited: *See—*
Nisbet, Alexander, 3,834,149.

De Boer, Herman O.: *See—*
Wolff, David F.; De Boer, Herman O.; Tiger, Emil; and McCarthy, James G., 3,834,814.

De Brecht, Robert Eugene; and Napoli, Louis Sebastian, to RCA Corporation. Microwave transmission line and devices using multiple coplanar conductors. 3,835,421, Cl. 333-26.000.

De Cicco, Michael A., to Sundstrand Heat Transfer, Inc. Method of making heat exchanger. 3,833,986, Cl. 29-157.30a.

De Faccio, Paul L.; and West, Harold H., to Harbor Island Machine Works, Inc. Food tray covering machine. 3,834,120, Cl. 53-298.000.

De Jonge, Cornelis R. H. I.; Mijs, William J.; and Hageman, Hendrik J., to Akzo N.V. Stabilization of organic substances that are liable to peroxidic decomposition. 3,835,095, Cl. 260-45.85s.

De Laval Separator Company, The: *See—*
Heitman, Richard G., 3,834,407.

De Long, W. Bradford: *See—*
White, Robert W.; and De Long, W. Bradford, 3,834,021.

De Muylder, Jean-Marie, to Societe D'Etudes et de Realisations. 3-Substituted-4-hydroxy-coumarins. 3,835,161, Cl. 260-343.20r.

De Panafieu, Philippe: *See—*
Brun, Andre; Jaffe, Albert; and De Panafieu, Philippe, 3,834,460.

De Penti, Kenneth L., to Midland-Ross Corporation. Rotary operated coupler locklift mechanism. 3,834,553, Cl. 212-166.000.

De Ris, John N.: *See—*
Orloff, Lawrence; De Ris, John N.; and Coons, John D., 3,834,462.

De Villers, Julien, to Societe C.M.V. Automatic handling machines. 3,834,557, Cl. 214-1.0bh.

De Wied, David: *See—*
Greven, Hendrik Marie; and De Wied, David, 3,835,110.

De Wilde, Ralph J. Table. 3,834,325, Cl. 108-109.000.

DeAndrea, Joseph D. Device for demonstrating and calculating mathematical functions. 3,835,298, Cl. 235-61.0gm.

Deco Products Company; consisting of Charles, Andrew H., Henderson, Thomas J., Atkinson, Guy F., Company and Henderson, James A., Corporation: *See—*
Hollingsworth, Elmont E.; and Storlie, Llewellyn O., 3,833,969.

Deere & Company: *See—*
Koch, James Allan, 3,834,738.
Treichel, Richard, 3,834,284.

Degremont, Societe Generale d'Epuration et d'Assaninissement: *See—*
Bernard, Jacques J. P., 3,834,540.

Dehne, Axel G. Double-acting expander engine and cryostat. 3,834,172, Cl. 62-6.000.

Del Mar Engineering Laboratories: *See—*
Sanctuary, Clifford; Woods, Donald C.; and Bachman, John A., 3,834,375.

Del Pico, Joseph; and Shea, Edward M., to Abcor, Inc. Supported tubular membrane. 3,834,545, Cl. 210-321.000.

Delbag-Luftfilter Gesellschaft mit beschrankter Haftung: *See—*
Neumann, Gerhard Max, 3,834,131.

Delfino, Willie. Hay rake tooth and mounting base. 3,834,140, Cl. 56-400.000.

Demos, Gary A.; and Ruhoff, David. Device for changing frequency of constant amplitude square waves. 3,835,396, Cl. 328-41.000.

Dennison, Edward, to Yardney International Corporation. Multi-cell metal-fluid battery. 3,834,944, Cl. 136-86.00a.

Dennnard, Robert H.; and Spampinato, Dominic P., to International Business Machines Corporation. Process for the formation of self-aligned silicon and aluminum gates. 3,834,959, Cl. 156-11.000.

Denzel, Theodor; and Hoehn, Hans, to Squibb, E. R. & Sons, Inc. Amino derivatives of (4,3-c)pyrazolopyridine carboxylic acids and esters. 3,835,144, Cl. 260-295.50b.

Deritend Engineering Company Limited, The: *See—*
Bishop, Thomas Desmond, 3,834,291.

Derr, Walter R.: *See—*
Davis, Francis E., Jr.; Derr, Walter R.; and Ginter, Earle F., 3,835,063.

Desmarais, Armand J., to Hercules Incorporated. Joint cement compositions. 3,835,074, Cl. 260-17.000.

Detrex Chemical Industries, Inc.: *See—*
Thalacker, Richard E., 3,834,408.

Deutsche Texaco Aktiengesellschaft: *See—*
Kunert, Max; and Sandhack, Lothar, 3,835,025.

Devaney, Mark J., Jr., to Eastman Kodak Company. Normally locked spindle mechanism unlockable by a complimentary core. 3,834,640, Cl. 242-68.300.

Dexter, C. H., & Sons, Inc.: *See—*
Conway, Bernard W.; and Moran, James, 3,834,983.

Dexter, Carl J. Automobile sunshine shade. 3,834,755, Cl. 296-97.00g.

Di Renzo, Simon, to Philco-Ford Corporation. Method of forming electrical connections. 3,834,015, Cl. 29-628.000.

Diaclear, Inc.: *See—*
Portyrata, Raymond E., 3,834,535.

Diamond Shamrock Corporation: *See—*
Beck, Charles A., 3,835,070.

Dickinson, William B.; and Vaupotic, Marcia P., to Sterling Drug Inc. 2- and 3-Pyridylisothiocyanates. 3,835,145, Cl. 260-294.80e.

Dictaphone Corporation: *See—*
Matz, Bjorn J., 3,835,261.

Diehl, Christiane, heirs: *See—*
Bielfeldt, Heinz, deceased, 3,834,053.

Dietze, Wolfgang; Emeis, Reimer; Keller, Wolfgang; Muehlbauer, Alfred; and Reuschel, Konrad, to Siemens Aktiengesellschaft. Device for holding semiconductor discs during high temperature treatment. 3,834,349, Cl. 118-500.000.

Dietzel, Klaus, to Zako Rohrverbindungen GmbH & Co. KG. Proces and arrangement for double flanging or pipes. 3,833,984, Cl. 29-157.00r.

Dietzgen Corporation: *See—*
Brownscombe, Philip J., 3,834,800.

DiMinno, Philip J., Jr., to United Aircraft Corporation. Water separator. 3,834,126, Cl. 55-210.000.

Dinkhauser, Guenter: *See—*
Hohenschutz, Heinz; Franz, Dieter; Fuelow, Horst; and Dinkhauser, Guenter, 3,835,185.

Display-Design GmbH fur moderne Verkaufsforderungsmittel und Raumausstattung: *See—*
Lang, Franz Josef, 3,834,324.

Dixon, Jack: *See—*
Trask, Walter H.; and Dixon, Jack, 3,834,182.

Dixon, William D., to Monsanto Company. Stunting plants employing 4-oxo-alpha-phenyl-2, 5-cyclohexadiene-1, alpha-acetonitrile, 0-(alkyl-carbamoyl)oximes. 3,834,887, Cl. 71-76.000.

Dlouhy, Gerald Ernest. Baseball game. 3,834,703, Cl. 273-89.000.

Dmitriev, Leonid Sergeevich: *See—*
Nessler, Andrei Maximilianovich; Raag, Frants Ivanovich; Savelieva, Maria Pavolovna; Vikhrova, Agrippina Gavrilovna; and Dmitriev, Leonid Sergeevich, 3,834,146.

Doane, William M.: *See—*
Wing, Robert E.; and Doane, William M., 3,834,984.

Dock & Dock, the firm of: *See—*
Hunter, Roland L., 3,834,656.

Docksteader, Wesley E. Impact ore mill. 3,834,632, Cl. 241-187.000.

Dodd, John Alton, Jr.; and Okamoto, Raymond Fujio, to RCA Corporation. Method of making elliptically or rectangularly graded photoprinting masters. 3,834,905, Cl. 96-27.00e.

Dodgson, Gilbert Edward. Adjustable kingpin assembly for trailers. 3,834,736, Cl. 280-407.000.

Dolbear, Geoffrey E.; and Magee, John S., to Grace, W. R., & Co. Catalytic cracking with silver-rare earth of copper-rare earth exchanged Y-type zeolite. 3,835,032, Cl. 208-120.000.

Dolco Packaging Corporation: *See—*
Congleton, Wayne, 3,834,609.

Doll, Brendan L., to Cellu Products Company. Apparatus for forming a stretchable tubular packaging material. 3,834,969, Cl. 156-466.000.

Dollmeier, Georg: *See—*
Muller, Karl-Heinz; Rindfleisch, Volker; Von Rauch, Moriz; Willasch, Dieter; and Dollmeier, Georg, 3,835,246.

Domann, Helmut: *See—*
Fleischer, Helmut; Schnaibel, Eberhard; and Domann, Helmut, 3,834,770.

Dominion Auto Accessories Limited: *See—*
Brudy, Peter E., 3,834,789.

Donahue, Edward T.: *See—*
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Donahue, Leo O.: *See—*
Behrens, Roy E.; and Donahue, Leo O., 3,834,288.
Behrens, Roy E.; and Donahue, Leo O., 3,834,289.

Donaldson, George Alan. Impact attenuating, replaceable powerplant support. 3,834,476, Cl. 180-64.001.

Donnelly, Brendan J.: *See—*
Shieh, Kenneth K.; Lee, Howard A.; and Donnelly, Brendan J., 3,834,988.

Donnelly, James F., to Jamesbury Corporation. Metal seat butterfly valve. 3,834,663, Cl. 251-173.000.

Donner, Siegmar, to Fa Kleindienst Fa. & Co. Web-reading system with replacable drum. 3,835,300, Cl. 235-61.11e.

Doonan, David F.: *See—*
Hirdler, Louis C.; Schiessl, Henry W.; and Doonan, David F., 3,835,136.

Dorff, Donald; and Santi, Joseph A., to Hydraulic Products Incorporated. Hydraulic power translating device. 3,834,842, Cl. 418-75.000.

Dornier System GmbH: *See—*

Hepp, Wolfgang; Pimiskern, Klaus; and Herbert, Werner, 3,833,981.

Dorschner, Kenneth P.; and Albright, James A., to SCM Corporation. Phenyl nitrone derivatives useful as seed protectants. 3,834,073, Cl. 47-57.600.

dos Santos, Antonio Monterio Alves. Rational alphabetic system. 3,835,468, Cl. 340-365.00r.

Doschek, Antony Z.; and Doschek, Mary Louise. Acoustic speaker system. 3,834,485, Cl. 181-31.00b.

Doschek, Mary Louise: *See*—
Doschek, Antony Z.; and Doschek, Mary Louise, 3,834,485.

Dostourian, Harry, to American Optical Corporation. Hearing protector headset. 3,833,939, Cl. 2-209.000.

Dougall, James R.; and Moll, Alvon Donald, to Minneapolis Electric Steel Castings Company. Bowl and mantle assembly for cone crushers. 3,834,633, Cl. 241-295.000.

Douglas, Joseph E.: *See*—
Witt, Jerry L.; Freeman, Charles F., Sr.; and Douglas, Joseph E., 3,834,008.

Dow Chemical Company, The: *See*—
Clarke, Ewart C.; and Glew, David N., 3,834,456.
Hart, Porter, 3,834,529.
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Symm, Richard H.; and Barron, Benny G., 3,834,935.
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Dowd, Daniel J., to Westvaco Corporation. Chamfering apparatus. 3,834,274, Cl. 90-11.00r.

Dowell, William B., Jr., to Aerotron, Inc. Frequency adjustable encoder and decoder. 3,835,388, Cl. 325-64.000.

Downs, William: *See*—
Darlinger, Edward P.; Downs, William; and Stewart, Jack F., 3,834,129.

Drake, Frederick E. Expansion joint. 3,834,741, Cl. 285-226.000.

Dravo Corporation: *See*—
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Middough, William V.; and Jaquay, Louis H., 3,835,296.

Dresser Industries, Inc.: *See*—
Bottoms, Clifford C., 3,834,471.
Brackin, Wayne L., 3,834,751.
Fiegl, David Elmer, 3,834,774.

Dreves, Alfred E., to General Electric Company. Membrane mounting assembly and method. 3,834,543, Cl. 210-232.000.

Drummond Scientific Company: *See*—
Kenney, James W., 3,834,240.
Robinson, John E.; and Kenney, James W., 3,834,590.

Du Fort, Edward C.: *See*—
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du Mesnil du Buisson, Godefroy L. M. Lowering apparatus. 3,834,671, Cl. 254-158.000.

Du Pont de Nemours, E. I., and Company: *See*—
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Brown, Morton; Hoeschele, Guenther Kurt; and Witsiepe, William Kenneth, 3,835,098.
Cochran, Stanley Robert; and Johnson, Melvin Harry, 3,833,976.
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Dubois, Normand A.: *See*—
Dubois, Normand A.; and Skeen, Gary R. (said Skeen assor to), 3,834,825.

Dubois, Normand A.; and Skeen, Gary R., said Skeen assor to Dubois, Normand A. Chain anchoring means for a bicycle lock or the like. 3,834,825, Cl. 403-378.000.

Dubois, Paul: *See*—
Bequet, Jean Francois; Dubois, Paul; and Van Asbroeck, Roger, 3,834,853.

Ducate, John S. Pivotal clamping mechanism for die sets. 3,834,217, Cl. 72-446.000.

Dudley, Michael Alan; and Claessens, Pierre Leon, to Canada Wire and Cable Limited. Electrocoating process and apparatus. 3,835,005, Cl. 204-181.000.

Dufresne, Webster J., to International Telephone and Telegraph Corporation. Joy stick control mechanism with movable printed circuit switch assembly controlling motor input power polarity. 3,835,270, Cl. 200-6.00a.

Dugan, John. Hinged gutter cover. 3,834,091, Cl. 52-12.000.

Dugan, John J.; and Yao, Keith C., to Esso Research and Engineering Company. Sulfur removal from molten media. 3,835,033, Cl. 208-125.000.

Dulle, Bernard Allen, to Procter & Gamble Company, The. Textile tampon having a resilient foam core. 3,834,389, Cl. 128-285.000.

Dunlop Limited: *See*—
Ottewell, Roger James; and Moring, Peter Lothar Ernst, 3,834,150.

Dunn, Elman R., to Litton Industries, Inc. Workpiece retainer assembly for disc grinders. 3,834,087, Cl. 51-237.00t.

Dunn, R. S.; and Rife, William J., to Neet Products Incorporated. Roof lock member. 3,834,104, Cl. 52-376.000.

Dunn, Ralph; Ayton, Ian F.; Cane, Albert; Collins, Harold B.; Lewis, J. Stephen; Morris, Joseph P.; and Shapero, Wallace H., to Mattel, Inc. Sewing machine toy. 3,834,974, Cl. 156-578.000.

Dunsmoor, Lyle H., to PPG Industries, Inc. Process for the recovery of dissolved mercury salts from aqueous solutions. 3,835,217, Cl. 423-499.000.

Durin, Michel, to Societe Anonyme Automobiles Citroen. Device for measuring liquid level and air pump for use therein. 3,834,236, Cl. 73-302.000.

Duro-Dyne Corporation: *See*—
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Dussourd, Jules L.; and Haugen, Ronald L., to Ingersoll-Rand Company. Gas drying apparatus and method. 3,834,136, Cl. 55-33.000.

Dvorakova, Alena: *See*—
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Dyno Industrier A.S.: *See*—
Samuelsen, Eirik, 3,834,954.

Dyntar, Milos, to Landis & G Y R AG. Pid controller for heating, ventilating and air conditioning systems. 3,834,617, Cl. 236-1.00c.

Dyson, Ian Fraser, to Du Pont de Nemours, E. I., and Company. Process for preparing aromatic acid chlorides. 3,835,187, Cl. 260-544.00m.

Earl, Thad J.: *See*—
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East Penn Manufacturing Company, Inc.: *See*—
Bowers, Bernard P.; and Breidegam, Delight E., Jr., 3,834,479.

Eastman Kodak Company: *See*—
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Smith, Glen C., 3,834,263.
Wright, Charles J., 3,834,902.

Ebner, Cuno; and Schuler, Max, to Fidelity Union Trust Company, Executive Trustee under Sandoz Trust of 5-4-55,mesne. Herbicidal composition and method employing pyridazone derivatives. 3,834,889, Cl. 71-92.000.

Economy, James; and Wohrer, Luis C., to Carborundum Company, The. Phenolic resin ion exchange fibers. 3,835,072, Cl. 260-2.0lc.

Edden, Francis E.; and Engeman, Joseph P., to Cutler-Hammer Inc. System for automatic gain measurement. 3,835,378, Cl. 324-57.00r.

Edelmann, Carl, GmbH: *See*—
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Edo Corporation: *See*—
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Edwards, Albert, to Baker Perkins Limited. Method and apparatus for the preparation of foundry moulds or cores. 3,834,442, Cl. 164-21.000.

Edwards, Robert Andrew: *See*—
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Efficiency Products Company: *See*—
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Lazareva, Elena Nikolaevna; Belozerova, Olga Petrovna; Efimova, Tamara Ivanovna; Sitnikova, Ljudmila Vladimirovna; and Krjuchkova, Alexandra Pavlovna, 3,835,190.

Efka-Werke Fritz Kiehn GmbH: *See—*
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Ehrlich, Robert M.; and Cox, Raymond E., to General Foods Corporation. Slow-set pectin and process for preparing same. 3,835,111, Cl. 260-209.500.

Eidophor AG: *See—*
Mast, Fred; and La Roche, Ulrich, 3,835,346.

Eiler, Peter, to Gottwald, Leo, K.G. Crane overload safety device with temperature compensation. 3,834,550, Cl. 212-39.0ms.

Eiley, David, to Lucas, Joseph, (Electrical) Limited. Overload protection circuits. 3,835,367, Cl. 322-28.000.

Eimer, Johannes: *See—*
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Eisele, Judith A.; and Heinen, Harold J., to United States of America, Interior. Recovery of gold. 3,834,896, Cl. 75-112.000.

Ekstrom, Ake; Jackson, Per Olof; and Jansson, Lenhart, to Allmanna Svenska Elektriska Aktiebolaget. Control equipment for an electronic power convertor. 3,835,365, Cl. 321-11.000.

Electricite de France (Service National): *See—*
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Electrohome Limited: *See—*
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Eliasson, Karl Rudolf. Apparatus for producing pellets of expanded clay. 3,834,862, Cl. 432-106.000.

Elitex, Zarody Textilniko Strojirenstvi generalni: *See—*
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Elkins, Edward John, to Valley Tow-Rite; a division of Scott & Fetzer Co. Device for towing one vehicle with another. 3,834,737, Cl. 280-502.000.

Ellingham, Bruce; and Chisholm, Andrew Alexander, to Platt International Limited. Open-end spinning of textile yarns. 3,834,145, Cl. 57-56.000.

Elliott, John Scotchford; Jayne, Gerald John Joseph; and Folliard, Patrick James, to Cooper, Edwin & Company Limited. Trithiopyrophosphates. 3,835,202, Cl. 260-933.000.

Elmeg-Electro-Mechanik GmbH: *See—*
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Elson, Arthur M., to Acme-Hamilton Manufacturing Corporation. Contractile-extensible conduit and method of making same. 3,834,423, Cl. 138-122.000.

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Empire Abrasive Equipment Corporation: *See—*
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English Electric Company Limited, The: *See—*
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Enomoto, Shuhji: *See—*
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Ensanian, Minas. Diagnostic electrical scanning. 3,834,374, Cl. 128-2.10r.

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Environmental Products, Inc.: *See—*
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Epstein, Philip L., to Quindar Electronics, Inc. Crystal phase-locked loop. 3,835,413, Cl. 331-1.00a.

Erickson, Allen M.; Kaplow, Robert L.; and King, W. Lawton, to United States of America, Navy. Direct vision laser range gate system. 3,834,795, Cl. 350-161.000.

Eriebach, Richard, to Gertsch AG. Ski boot and use thereof as part of a releasable ski binding. 3,834,723, Cl. 280-11.35d.

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Eskeli, Michael. Turbine with heating and cooling. 3,834,179, Cl. 62-401.000.

Eskenazi, Murray L. Closure cap for container. 3,834,572, Cl. 215-272.000.

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Ethyl Corporation: *See—*
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Eustance, John W., to General Electric Company. Stabilized ester impregnant. 3,833,978, Cl. 29-25.420.

Evans, Robert G., Company: *See—*
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Excel Tool and Die Corporation: *See—*
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Expando Products Company: *See—*
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Extraktionstechnik Gesellschaft fur Anlagenbau GmbH: *See—*
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Fa Kleindienst Fa. & Co.: *See—*
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Faber, Guy; and Maggi, Carlo, to Brown, Boveri & Company Ltd. Blade construction for axial-flow turbo-machines and method of protecting turbo-machine blades against stress corrosion cracking. 3,834,833, Cl. 416-241.000.

Fabricant, Norman A. Toy straw with an internal moving figure. 3,834,068, Cl. 46-44.000.

Factory Mutual Research Corporation: *See—*
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Fainman, Morton; and McAuley, Charles Strouse. Method of purifying lubricating oils. 3,835,035, Cl. 208-181.000.

Fairweather, John Anthony; and Dalton, Ronald James, to Imperial Chemical Industries Limited. Purification of aromatic hydrocarbons. 3,835,037, Cl. 208-260.000.

Falciai, Fabrizio; Falciai, Riccardo; Falciai, Giuseppe; and Falciai, Renzo. Symmetrical rotary pump for a variable speed hydrostatic transmission. 3,834,841, Cl. 418-26.000.

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Fannin, Wayne V., to General Motors Corporation. Combined fill, pressure relief and bleed valve assembly for pressure vessels. 3,834,412, Cl. 137-68.000.

Farbenfabriken Bayer Aktiengesellschaft: *See—*
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Farrow, Desmond J., to United States of America, Air Force. Metering injector valve. 3,834,675, Cl. 261-18.00a.

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Fechheimer, Paul R. Filling machine for containers. 3,834,430, Cl. 141-119.000.

Fedorovsky, Boris Borisovich: *See*—
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Fellows, Thomas George; and Bevan, Richard John Armstrong, to Tracked Hovercraft Limited. Ground transportation systems and tracks and vehicles therefor. 3,834,318, Cl. 104-148.0ms.

Feltz, Michel Joseph. Ferrrous alloys. 3,834,950, Cl. 148-31.000.

Fendel, Kurt; Bauer, Johann; and Kohl, F. Johannes, to Wacker-Chemie GmbH. Method for the polymerization of vinyl chloride/vinyl ester copolymers and the high bulk density copolymers of the process. 3,835,105, Cl. 260-87.100.

Fendley, Richard L.; Hoenig, Gerhard E.; Poehlmann, George; and Prendergast, John M., Jr., to Western Electric Company, Incorporated, mesne. Apparatus for solid-phase bonding mating members through an interposed pre-shaped compliant medium. 3,834,604, Cl. 28-5.000.

Ferat, Alain; Masotti, Robert; and Chavenel, Hubert, to Rhone-Progil. Process for bonding copper or iron to titanium or tantalum. 3,835,007, Cl. 204-192.000.

Feren, Conrad J.; and Squires, Robert W., to Lilly, Eli, and Company. Electrochemical device electrolyte for chemical analysis. 3,835,062, Cl. 252-408.000.

Ferguson, Bernard J. Track system wall assembly for houses or the like. 3,834,094, Cl. 52-122.000.

Ferguson, Robert M.: *See*—
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Ferrari, Andres; Blumle, Leo J.; and Bonar, Laurence C., to Damon Corporation. Multiple photometer assembly. 3,834,821, Cl. 356-181.000.

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Ferro Corporation, mesne: *See*—
Searight, Charles E.; Brasfield, Steven H., Sr.; and McCraney, Thomas E., 3,835,087.

Fetterman, Harold R.: *See*—
Schlossberg, Howard R.; Fetterman, Harold R.; and Waldman, Jerry, 3,835,416.

FIAT Societa per Azioni: *See*—
Candellero, Giovanni; and Aimo, Stefano, 3,834,499.

Fibreboard Corporation: *See*—
Johnson, Robert B.; and Robert, Louis F., 3,834,115.

Fidelity Union Trust Company, Executive Trustee under Sandoz Trust of 5-4-55, mesne: *See*—
Ebner, Cuno; and Schuler, Max, 3,834,889.

Fiegl, David Elmer, to Dresser Industries, Inc. Center plate bearing. 3,834,774, Cl. 308-137.000.

Field, John Rosslyn, to Plessey Handel und Investments A.G. Electric switches. 3,835,276, Cl. 200-160.000.

Filippi, Ernest A.; and Smith, Matthew S. Powered line casting arrangement. 3,834,056, Cl. 43-19.000.

Finike Italiana Marposs-Soc, In accomandita Semplice di Mario Possati & C.: *See*—
Solaroli, Sergio, 3,834,532.

Finke, Harry P.; Carr, Hugh B.; and Wilson, Carl D., to Bloom Engineering Company, Inc. Three lever valve with relief port. 3,834,420, Cl. 137-630.120.

Finnemore, Harlan E., to Air Preheater Company, The. Horizontal support for rotary regenerative heat exchanger. 3,834,449, Cl. 165-7.000.

Fiorenza, Armand A.: *See*—
Burg, Robert J.; Lieberman, Milton; and Fiorenza, Armand A., 3,834,549.

Firestone Tire & Rubber Company, The: *See*—
Boutsicaris, Stephen P.; and Hayes, Robert A., 3,835,075.
Laman, Joseph Richard, 3,834,538.

Firstenberg, Harold S. Track laying attachment to wheels having protruding hubs. 3,834,771, Cl. 305-25.000.

Fischer, Edgar: *See*—
Cherdron, Harald; Fischer, Edgar; and Muck, Karl Friedrich, 3,835,096.

Fischer, Edgar; and Muck, Karl Friedrich. Light degradable thermoplastic molding composition based on polyacetals. 3,835,097, Cl. 260-67.0fp.

Fischer, William K., to Uniroyal, Inc. Thermoplastic blend of copolymer rubber and polyolefin plastic. 3,835,201, Cl. 260-897.00a.

Fisher, Dale J.; and Mueller, Theodore R., to United States of America, Atomic Energy Commission. Automatic controlled-current coulometric environmental monitor. 3,835,008, Cl. 204-195.00t.

Fisher, Julian V.; and Heck, Daniel C., to Illinois Tool Works Inc. Dielectric tool. 3,833,953, Cl. 7-5.500.

Fishman, Gerald J., to Brown Engineering Company, Inc. Radiation detectors using multiple scintillation crystal peices. 3,835,325, Cl. 250-366.000.

Flaherty, Francis Edward: *See*—
Tafapolsky, Bernard; and Flaherty, Francis Edward, 3,834,265.

Fleischer, Helmut; Schnaibel, Eberhard; and Domann, Helmut, to Bosch, Robert, G.m.b.H. Safety arrangement for protecting against the locking of wheels in motor vehicles. 3,834,770, Cl. 303-21.00p.

Fleischer, Paul C., Jr.: *See*—
Rossell, Gary L.; Fleischer, Paul C., Jr.; and Seifer, Maurice I., 3,834,979.

Fletcher, Eldon Lawrence, to Du Pont de Nemours, E. I., and Company, mesne. Open cell foam device for gas distribution in filament quenching chimneys. 3,834,847, Cl. 425-72.000.

Fleury, Jean E.: *See*—
Bourdolle, Henri M.; Lacroix, Serge R.; Fleury, Jean E.; Peuillot, Gilbert; and Pinot, Jean, 3,835,016.

FMC Corporation: *See*—
Reimers, James L., 3,834,517.

Folliard, Patrick James: *See*—
Elliott, John Scotchford; Jayne, Gerald John Joseph; and Folliard, Patrick James, 3,835,202.

Foltz, James W., to Motorola, Inc. Binary universal flip-flop employing complementary insulated gate field effect transistors. 3,835,337, Cl. 307-279.000.

Fonas, Kenneth R. Method and apparatus for tuning a pair of skis. 3,834,250, Cl. 76-101.00r.

Ford Motor Company: *See*—
Anderson, Carroll C., 3,834,728.
Gandhi, Haren S.; Kummer, Joseph T.; and Shelef, Mordecai, 3,835,069.
Kansier, Denis A., 3,834,730.
Labana, Santokh S.; Golovoy, Amos; and Chang, Yun Feng, 3,834,926.

Ford, Robert B. Step arrangement. 3,834,490, Cl. 182-88.000.

Fordyce, Homer E.; and Fritz, Gerald D., to Marley Company, The. Fireproof, prefab fill support structure for cooling tower. 3,834,681, Cl. 261-111.000.

Formica Corporation: *See*—
Blasing, Elmer Paul, Jr., 3,834,964.

Forrest Paschal Machinery Company: *See*—
Paschal, Forrest A.; and Stuart, Gerald L., 3,834,298.

Fortman, Lloyd D.; and Kasper, Joseph G., to Tennnant Company. Surface maintenance machine. 3,833,961, Cl. 15-50.00c.

Foster, Linda R.: *See*—
Foster, Stephen F.; and Foster, Linda R., 3,834,396.

Foster, Stephen F.; and Foster, Linda R. Temperature differnetial applicator holder. 3,834,396, Cl. 128-403.000.

Foster Wheeler Corporation: *See*—
Bow, William J., 3,834,133.

Fouquet-Werk Frauz & Planck: *See*—
Kuhn, Falk, 3,834,190.

Fournier, Pierre: *See*—
Mardiguian, Jean; and Fournier, Pierre, 3,835,112.

Fowler, Donald M. Shoe sole structure. 3,834,046, Cl. 36-28.000.

Fowler, Raymond L.; Hill, James D.; McCornack, Richard W.; Perkins, N. Kenneth; Sendelweck, Michael L.; West, Donald L.; Williams, Thomas H.; and Yosmali, Krikor, to International Business Machines Corporation. Ink jet printing apparatus with line sweep an incremental printing facilities. 3,834,505, Cl. 197-1.00r.

Fox, Daniel W.; and Wambach, Allen D., to General Electric Company. Polylactone-modified linear polyesters and molding compositions containing the same. 3,835,089, Cl. 260-40.00r.

Fox, Richard; Neill, Keith; and Tankey, Howard, to ICI Australia Limited. Coated ammonium nitrate. 3,834,955, Cl. 149-7.000.

Frank, Robert G., to PPG Industries, Inc. Method of conveying glass sheets through a furnace. 3,834,885, Cl. 65-106.000.

Franz, Dieter: *See*—
Hohenschutz, Heinz; Franz, Dieter; Fuelow, Horst; and Dinkhauser, Guenter, 3,835,185.

Franzen, Gustav, to Palitex-Project Company GmbH. Apparatus for repositioning the spindle rotor and for actuating pneumatic threading mechanisms of a textile yarn processing machine. 3,834,144, Cl. 57-34.00r.

Frayer, James A.; and Stauffer, Harry C., to Gulf Research & Development Company. Arctic diesel fuel. 3,835,022, Cl. 208-15.000.

Frazier, Harry W.; Smith, Lowell R.; and Wagenknecht, John H., to Monsanto Company. Electrolytic process for producing N-phosphonomethyl glycine. 3,835,000, Cl. 204-78.000.

Fredricks, Don: *See*—
Hunter, Roland L., 3,834,656.

Freeman, Charles F., Sr.: *See*—
Witt, Jerry L.; Freeman, Charles F., Sr.; and Douglas, Joseph E., 3,834,008.

Freeman, Miller L., 1/2 to Ervin, John W. Radiant energy collector or reflector. 3,835,342, Cl. 313-114.000.

Fregeolle, Oscar, to Pilot Research Corporation. Fabric slitting method and apparatus for circular knitting machine. 3,834,191, Cl. 66-147.000.
Freitas, Antone, Jr. Mounting and support device for a rotary machine. 3,834,657, Cl. 248-23.000.
Fremont, Maurice Henri Louis: *See—*
Rouyer, Georges Aimable Theophile; and Fremont, Maurice Henri Louis, 3,834,199.
French, Douglas M.: *See—*
Palmieri, Joseph; and French, Douglas M., 3,835,454.
French, Horace Edgar, III; and Smith, Harold F., to UMC Industries, Inc. Heat exchange unit. 3,834,180, Cl. 62-417.000.
French, Kenneth W.; Haugsjaa, Paul O.; and Heller, Adam, to GTE Laboratories Incorporated. Electroluminescent solutions. 3,835,345, Cl. 313-358.000.
Frendberg, Arthur M.; and Gorzegno, Walter P. Babcodk & Wilcox Company, The. 3,834,358, Cl. Vapor generator.
Freund Ind. Co., Ltd.: *See—*
Motoyama, Shimesu; and Yamada, Shuri, 3,834,347.
Frey, La Verne Lawrence: *See—*
Budych, Irvin; Frey, La Verne Lawrence; and Reefman, William Edward, 3,833,999.
Frey, Max. Device for measuring the lateral forces required to release a ski boot from a ski toe clamp. 3,834,223, Cl. 73-133.00a.
Fried, John H.: *See—*
Pfister, Jurg R.; Harrison, Ian T.; and Fried, John H., 3,835,139.
Pfister, Jurg R.; Harrison, Ian T.; and Fried, John H., 3,835,157.
Pfister, Jurg R.; Harrison, Ian T.; and Fried, John H., 3,835,158.
Fried. Krupp Gesellschaft mit beschrankter Haftung: *See—*
Peter, Klaus Dieter, 3,834,994.
Friedenfeld, Gerard: *See—*
Cook, Neal A.; and Friedenfeld, Gerard, 3,834,752.
Frito-Lay, Inc.: *See—*
Wisdom, Lawrence W.; and Hilton, Barney W., 3,835,222.
Fritsch, Carl W., Jr.: *See—*
Cleveland, Joseph J.; and Fritsch, Carl W., Jr., 3,834,915.
Fritz, Gerald D.: *See—*
Fordyce, Homer E.; and Fritz, Gerald D., 3,834,681.
Fritz, Hans: *See—*
Werle, Eugen; and Fritz, Hans, 3,834,990.
Frost, David S., to Transcanada Pipelines Limited. Method and apparatus for providing speed compensation for information containing signals in which the threshold level of the detector is varied proporational to speed. 3,835,374, Cl. 324-37.000.
Frost, Lawrence W.; and Scala, Luciano C., to Westinghouse Electric Corporation. Method for forming reverse osmosis membranes composed of polyamic acid salts. 3,835,207, Cl. 264-41.000.
Fuchs, John R., to General Motors Corporation. Power tool with torque control. 3,834,467, Cl. 173-12.000.
Fuelow, Horst: *See—*
Hohenschutz, Heinz; Franz, Dieter; Fuelow, Horst; and Dinkhauser, Guenter, 3,835,185.
Fuji Photo Film Co., Ltd.: *See—*
Hara, Hiroshi; Yokota, Yukio; Amano, Hiroyuki; and Nishimura, Tokio, 3,834,908.
Hayashi, Takao; Kato, Hajime; and Ishige, Sadao, 3,834,929.
Inoue, Eiichi; Kokado, Hiroshi; Shimzu, Isamu; and Ohtsuka, Shuichi, 3,834,903.
Tatsuta, Sumitaka; and Ueno, Wataru, 3,834,928.
Watanabe, Masaru; and Ohashi, Azusa, 3,834,998.
Fuji Shashin Film Kabushiki Kaisha: *See—*
Matsumoto, Seiji; and Honjo, Satoru, 3,834,904.
Fujii, Motoharu: *See—*
Takahashi, Isao; Fujii, Motoharu; Kawakubo, Kazuo; Ariga, Masao; and Sugiura, Susumu, 3,834,808.
Fujimura, Yasuo: *See—*
Shindo, Minoru; Kakimoto, Morio; Nagano, Hiroyuki; and Fujimura, Yasuo, 3,835,125.
Fujisawa, Kiyoji: *See—*
Nishimura, Katsutoshi; Fujisawa, Kiyoji; and Yosumi, Toshikazu, 3,835,405.
Tomita, Masao; Fujisawa, Kiyoji; and Miura, Takashi, 3,835,401.
Fujisawa, Tamotsu; Kojima, Takakazu; and Hata, Kazumi, to Sagami Chemical Research Center. Process for preparing thiobisphenols. 3,835,196, Cl. 260-608.000.
Fujita, Hideo; Ishitobi, Masami; Suga, Hiroyoshi; Itohara, Fukuo; Matsushita, Michiharu; and Yamamoto, Hiroshi, to Dainichi-Nippon Cables, Ltd. and Tomoegawa Paper Manufacturing Co., Ltd. Method of removing ionic substances from a pulp. 3,835,006, Cl. 204-80.00r.
Fujitsu Limited: *See—*
Nakamura, Hiroshi; and Ohyama, Hiroaki, 3,835,404.
Fukatsu, Hiroshi: *See—*
Miyano, Tetsuji; Suzuki, Kunio; and Fukatsu, Hiroshi, 3,835,146.
Fukuda, Kazuo: *See—*
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Fukuda, Yoshiharu; and Ueda, Yoshihiko, to Onoda Cement Co., Ltd. Apparatus for heating and calcining of powder and/ or pulverized materials. 3,834,860, Cl. 432-58.000.
Fukuta, Kenji; Nagatsuka, Yoshihiro; Tsuburaya, Shigeo; Miyashita, Rihei; Sekiguti, Juniti; Aoki, Eiji; and Sasahara, Motoe, to Agency of Industrial Science & Technology. Three-dimensional fabric, and method and loom construction for the production thereof 3,834,424, Cl. 139-22.000.
Fukuta, Norihiko; and Paik, Young H., to United States of America, Interior, mesne. Method of generating ice nuclei smoke particles for weather modification and apparatus therefor. 3,835,059, Cl. 252-305.000.
Fulberth, Werner; and Neitzer, Erika, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Orally administrable drug dosage form having delayed action. 3,835,221, Cl. 424-20.000.
Fuller, Sterritt Ray; Munzel, Howard Everett; and Queener, Carl Allan, to International Business Machines Corporation. Copier with leading edge image control. 3,834,807, Cl. 355-3.00r.
Funabashi, Kazutoshi; and Harada, Kanji, to Teigiin Limited. Process for preparation of aromatic carboxylic acid chloride. 3,835,186, Cl. 260-544.00m.
Funnell, Peter Gilbert Rutland. Gates and operating mechanism therefor. 3,834,079, Cl. 49-193.000.
Furbeck, Warren R.: *See—*
Lee, Charles A.; Furbeck, Warren R.; and Kemp, Horace N., 3,834,689.
Furlenmeier, Andre: *See—*
Furst, Andor; Furlenmeier, Andre; Langemann, Albert; Waldovogel, Guy; Hocks, Peter; Kerb, Ulrich; and Wiechert, Rudolf, 3,835,127.
Furnes, Joe: *See—*
Hunter, Roland L., 3,834,656.
Furst, Andor; Furlenmeier, Andre; Langemann, Albert; Waldovogel, Guy; Hocks, Peter; Kerb, Ulrich; and Wiechert, Rudolf, to Hoffmann-La Roche Inc. 20-Hydrocarbyl-6-keto-steroids. 3,835,127, Cl. 260-239.550.
Furst, Beatrice M. Storage bag for clothing articles or the like. 3,834,497, Cl. 190-43.000.
Gades, Larry D.; Brnadberg, Lawrence C.; and Gorman, Roger A., to Pillsbury Company, The. Compasite microwave energy perturvating device. 3,835,280, Cl. 219-10.550.
Gaetano, Gianni: *See—*
United States of America, National Aeronautics and Space Administration, 3,835,318.
GAF Corporation: *See—*
Azorlosa, Julian L.; and Williams, Earl P., 3,835,084.
Gaghan, Stephen B., to Van Vlaanderen Machine Company, Inc. Roll for applying pressure. 3,833,980, Cl. 29-116.0ad.
Gainesville Machine Company, Inc.: *See—*
Harben, Grover S., Jr., 3,833,966.
Galliverti, Marco: *See—*
Colombo, Paolo; and Galliverti, Marco, 3,835,065.
Galneder, Frank X. Electrical termination means and electrode spacing means for maintaining a uniform electrode gap. 3,835,020, Cl. 204-268.000.
Gammaflux, Inc.: *See—*
Janda, Robert J., 3,834,038.
Gammel, Gregor; Heidtmann, Uwe; and Muller, Elmar, to BBC Brown, Boveri & Cie Aktiengesellschaft. Cooling arrangement for thyristor discs. 3,834,454, Cl. 165-80.000.
Gander, Robert Johns; and Potts, Richard McCrea, to Johnson & Johnson. Dental restorative cement compositions. 3,835,090, Cl. 260-42.150.
Gandhi, Haren S.; Kummer, Joseph T.; and Shelef, Mordecai, to Ford Motor Company. Ruthenium catalyst system. 3,835,069, Cl. 252-462.000.
Ganser, Wilhelm, to Uniroyal AG. Radially expandable and contractible mandrel. 3,834,257, Cl. 82-44.000.
Ganz Brothers, Inc.: *See—*
Morgese, Nicholas V.; and Ganz, Robert H., 3,834,525.
Ganz, Robert H.: *See—*
Morgese, Nicholas V.; and Ganz, Robert H., 3,834,525.
Gardiner, Gregory E., to Environmental Maintenance Corporation. Liquid clarifying for removing particles from a gas stream. 3,834,128, Cl. 55-228.000.
Garlock Inc.: *See—*
Masatchi, Morteza, 3,834,744.
Garner, Charles A.: *See—*
Richens, Robert H.; and Garner, Charles A., 3,834,688.
Garren, Ralph F.; and Sarver, Marvin B. Pipette. 3,834,241, Cl. 73-425.600.
Garretson, Oliver R.; and Harmon, Richard C., to Tieco, Inc. Probe card including a multiplicity of probe contacts and methods of making. 3,835,381, Cl. 324-158.00p.
Garrett, Abram J., to United States of America, Navy. Environmental fluidic switching device with plural diaphragms. 3,835,271, Cl. 200-834.000.
Garth, Bruce Hollis, to Du Pont de Nemours, E. I., and Company. Anticing gasoline composition. 3,834,882, Cl. 44-66.000.
Gartland, Albert J., Jr.; Carissimi, Vincent L.; and Riley, George A., to Hubbell, Harvey, Incorporated. Grounding plug 339/014.00p. 3,835,437, Cl. .
Gary, Wildon A. System stabilizer. 3,835,015, Cl. 204-197.000.
Gaunt, Jack R. Fishing lure. 3,834,058, Cl. 43-42.320.
Gauntlett, John H. Carriers for containers. 3,834,750, Cl. 294-87.200.
Geating, John A.: *See—*
Gottlieb, Stanley; and Geating, John A., 3,834,874.
Gebr. Bohler & Co. Aktiengesellschaft: *See—*
Swoboda, Karl; Kulmburg, Alfred; and Bloch, Rupert, 3,834,947.
Geiger, Ervin D. Archery bow with a sling shot in combination. 3,834,368, Cl. 124-20.00b.
Geiger, Fritz: *See—*
Maurer, Gerhard; and Geiger, Fritz, 3,834,503.

Geissler, Paul R.; and Healy, Frank J., to Esso Research and Engineering Company. Minimizing elution volumes in liquid chromatographic separations. 3,835,043, Cl. 210-31.00c.

Genbauffe, Francis S., to Robertshaw Controls Company. Control system and control device therefor or the like. 3,834,661, Cl. 251-89.000.

General American Transportation Corporation: *See*—
Heisterberg, Milton W., 3,834,576.

General Cable Corporation: *See*—
Masterson, Joseph B.; and Lawler, John D., 3,835,241.

General Electric Company: *See*—
Butsch, Richard L., 3,834,784.
D'Antonio, Nicholas F., 3,835,397.
Dreves, Alfred E., 3,834,543.
Eustance, John W., 3,833,978.
Fox, Daniel W.; and Wambach, Allen D., 3,835,089.
Gottlieb, Stanley; and Geating, John A., 3,834,874.
Grubb, Willard T.; and King, Lawrence H., 3,835,013.
Hoeschele, David F., Jr.; and Zubas, John D., 3,835,385.
Jaster, Heinz; Kosky, Philip G.; and Staub, Fred W., 3,834,835.
Jenkins, Thomas E., 3,834,783.
Lee, Gim F., Jr., 3,835,200.
Moehring, John Theodore; and Totten, Thomas Norman, Sr., 3,834,160.
Patenaude, Raymond Arthur; and Tonseth, Ivar Scott, Jr., 3,834,272.
Seiwert, David L.; and Hampton, Thomas L., 3,834,965.
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Turner, Roger C.; and Simms, Michael L., 3,834,779.
Vdoviak, John William, 3,834,159.
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General Foods Corporation: *See*—
Ehrlich, Robert M.; and Cox, Raymond E., 3,835,111.

General Motors Corporation: *See*—
Carroll, Charles D.; and Meginnis, George B., 3,834,001.
Fannin, Wayne V., 3,834,412.
Fuchs, John R., 3,834,467.
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Kingsbury, William L., 3,834,366.
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Kozinski, Richard C., 3,834,451.
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Lamprecht, Rudolf, 3,835,433.
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Stoltman, Donald D.; and Stettner, Ernest R., 3,834,843.

General Olynamics Corporation: *See*—
Liff, Ronald C., 3,835,384.

General Telephone & Electronics Laboratories, Incorporated: *See*—
Carlsen, W. John, 3,834,786.

Gentry, George W.; and Jepson, Robert M. Decoy anchor storage. 3,834,054, Cl. 43-3.000.

George, Edwin Francis; and Davidson, Alan John, to Imperial Chemical Industries Limited. Plant growth regulating compositions comprising 2-(S,S-dihydrocarbyl) sulphonium ethane phosphonic acid compounds as active component. 3,834,888, Cl. 71-87.000.

Gerber, Raymond: *See*—
Croquelois, Jean-Pierre; Erskine, William; and Gerber, Raymond, 3,834,301.

Gerstle, DeWitt F., to General Motors Corporation. Method for forming finished bore sized in laminated stator cores of dynamoelectric machines. 3,834,013, Cl. 29-596.000.

Gertsch AG: *See*—
Erlebach, Richard, 3,834,723.

Gerve, Andreas; Essig, Gunder; and Herkert, Bernhard, to Gesellschaft fur Kernforschung mbH. Method of determining the speed of rotating bodies. 3,835,326, Cl. 250-393.000.

Gervis, Tillie. Travel bird cage. 3,834,352, Cl. 119-17.000.

Gesellschaft fur Kernforschung mbH: *See*—
Gerve, Andreas; Essig, Gunder; and Herkert, Bernhard, 3,835,326.

Gewerkschaft Eisenhutte Westfalia: *See*—
Lobbe, Armin; and Von Schenck Zu Schweinsberg, Wolf-Rudiger, 3,834,170.

GFM Gesellschaft fur Fretigungstechnik und Maschinenbau Aktiengesellschaft: *See*—
Kralowetz, Bruno; and Grill, Hubert, 3,834,218.

Giald, Franco: *See*—
Arsura, Emilio; Baruffini, Agostino; Giald, Franco; Pellegrini, Giovanni; Ponci, Riccardo; and Scrivani, Pietro, 3,835,189.

Giannone, Charles: *See*—
Hinden, Milton; and Giannone, Charles, 3,835,285.

Gibson, Duane M., to Omark Industries, Inc. Fastener. 3,834,138, Cl. 56-290.000.

Giebel, Ernest W., to Union Camp Corporation. Compartmented tray. 3,834,608, Cl. 229-15.000.

Gift, Eugene G., to Emhart Corporation. Lane defining apparatus for handling articles in columns. 3,834,117, Cl. 53-61.000.

Giger, Urs, to Eta A.G., Ebauches-Fabrik. Device for fastening the inner end of a mainspring to the barrel arbor of a clockwork. 3,834,154, Cl. 58-87.000.

Gilbert, Richard Lyman; and Hryck, Michael David, to International Business Machines Corporation. Print density control. 3,834,306, Cl. 101-93.00c.

Gilbert, Roswell W., to RFL Industries, Inc. Stabilized alternating current source. 3,835,418, Cl. 331-141.000.

Gillette Company, The: *See*—
Seregely, Daniel E.; and Kidda, Bernard G., 3,834,823.
Tafapolsky, Bernard; and Flaherty, Francis Edward, 3,834,265.

Gillies, Georges Marshall; and Littlechild, James Edgar, to United Kingdom Atomic Energy Authority. Rotary kilns. 3,834,173, Cl. 62-46.000.

Ginter, Earle F.: *See*—
Davis, Francis E., Jr.; Derr, Walter R.; and Ginter, Earle F., 3,835,063.

Gipson, Robert Malone; Yeakey, Ernest Leon; and Peppel, William Jennings, to Jefferson Chemical Company, Inc. 2,2-Dialkylepoxides. 3,835,166, Cl. 260-348.00r.

Girard, Herbert A. Core transfer apparatus. 3,833,974, Cl. 28-1.00r.

Girard, Marc M.; and Martin, Daniel M., to Institut de Recherches de la Siderurgie Francaise. Method to regulate feeding of bulk material. 3,834,473, Cl. 177-1.000.

Giraud, Benjamin, to Pilot Research Corporation. Method and apparatus for slitting fabric on a circular knitting machine. 3,834,192, Cl. 66-147.000.

Giudicelli, Jean-Francois: *See*—
Najer, Henry; and Giudicelli, Jean-Francois, 3,835,159.

Giuffre, Luigi; Sioli, Giancarlo; and Mattone, Roberto, to Snia Viscosa Societa' Nazionale Industria Applicazioni Viscosa S.p.A. Method for the production of caprolactam and its precursors by formation and nitrosation of the cyclopentamethylene ketene-SO_2 adduct and products obtained thereby. 3,835,124, Cl. 260-239.30a.

Glass, Marvin, & Associates: *See*—
Breslow, Jeffrey D.; and Jaworski, Eugene, 3,834,070.
Breslow, Jeffrey D., 3,834,711.
Glass, Marvin I.; Kaelin, Bette M.; and Katzman, Allison W., 3,834,065.
Terzian, Rouben T.; and Glass, Marvin I., 3,834,071.

Glass, Marvin I.: *See*—
Terzian, Rouben T.; and Glass, Marvin I., 3,834,071.

Glass, Marvin I.; Kaelin, Bette M.; and Katzman, Allison W., to Glass, Marvin, & Associates. Fabric decorating kit. 3,834,065, Cl. 46-1.00r.

Glaverbel S.A.: *See*—
Brichard, Edgard, 3,834,975.

Gleim, Paul S.: *See*—
Bean, Kenneth E.; and Gleim, Paul S., 3,834,958.

Glew, David N.: *See*—
Clarke, Ewart C.; and Glew, David N., 3,834,456.

Gliemeroth, Georg, to Jenaer Glaswerke Schott & Gen. Lead borate containing phototropic glass. 3,834,912, Cl. 106-47.00r.

Globe-Union Inc.: *See*—
Amlie, Robert F.; and Weissman, Eugene Yehuda, 3,834,946.

Glory Kogyo Kabushiki Kaisha: *See*—
Inoue, Komei; and Asami, Kazuto, 3,834,116.

Glover, Donald F. Fireplace system. 3,834,619, Cl. 237-81.000.

Gobby, Alan B. Twin chain drive for tricycles. 3,834,721, Cl. 280-7.150.

Goddard, William H.: *See*—
Bundschuh, John J.; and Goddard, William H., 3,834,798.

Godderis, Georges L.: *See*—
Laurent, Michel A.; Lemoine, Jean M.; and Godderis, Georges L., 3,834,564.

Goettl, Adam D.; and Goettl, Bruce A., to Amory Research and Development Co.; a division of Goettl Enterprises. Fluid containing structure. 3,833,944, Cl. 4-172.000.

Goettl, Bruce A.: *See*—
Goettl, Adam D.; and Goettl, Bruce A., 3,833,944.

Goff, Raymon L.; and Rau, Jim L., to TRW Inc. Power steering system with auxiliary power capability. 3,834,278, Cl. 91-413.000.

Goggins, Robert B. Veterinary surgical tool for enlarging the pelvic girdle of heifer during parturition. 3,834,393, Cl. 128-305.000.

Golovoy, Amos: *See*—
Labana, Santokh S.; Golovoy, Amos; and Chang, Yun Feng, 3,834,926.

Gomi, Yoshifumi, to Kabushiki Kaisha Suwa Seikosha. Printer. 3,834,305, Cl. 101-93.00c.

Gonnella, Carmen J.: *See*—
Brady, Thomas J.; Lawrence, Richard L.; Gonnella, Carmen J.; and Metzler, Gottfried, III, 3,834,596.

Goodman, R. S., Company: *See*—
Goodman, Roy S. Jr.; Kirk, Dee Maryon; and Kirk, Harvey D., 3,834,565.

Goodman, Roy S. Jr.; Kirk, Dee Maryon; and Kirk, Harvey D., to Goodman, R. S., Company. Hydraulic loading ramp. 3,834,565, Cl. 214-85.000.

Gorbachev, Leonid Alexeevich: *See*—
Solonitsyn, Rem Alexandrovich; Vjukov, Ivan Elizarovich; Gorbachev, Leonid Alexeevich; Belonogov, Anatoly Mikhailovich; Vorobiev, Gennady Afanasievich; and Efimov, Alexandr Vasilievich, 3,834,982.

Gorham Tool Company: *See*—

Munro, Gerald Kirk, 3,834,829.

Gorman, Roger A.: *See—*
Gades, Larry D.; Brnadberg, Lawrence C.; and Gorman, Roger A., 3,835,280.

Gorynina, Zoya Alexandrovna: *See—*
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Gorzegno, Walter P.: *See—*
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Gotaverkens Angteknisko AB (Gotaverken Heat Engineering Co. Ltd.): *See—*
Hellstrom, Bengt; Karsberg, Ulf; and Astrom, Ingmar, 3,834,327.

Goto, Kenji; and Mizuno, Kiyohiko, to Messrs, Toyota Jidosha Kogyo Kabushiki Kaisha. Engine exhaust recirculation apparatus. 3,834,363, Cl. 123-119.00a.

Gottlieb, Stanley; and Geating, John A., to General Electric Company. Detection of malarial parasites in blood. 3,834,874, Cl. 23-230.00b.

Gottwald, Leo, K.G.: *See—*
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Gotz, Manfred K.: *See—*
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Sihvonen, Kauno E., 3,834,032.

Gournelle, Maurice Paul. Rams. 3,834,276, Cl. 91-501.000.

Gover, Avraham: *See—*
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Gower, Bob G.: *See—*
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Grace, W. R., & Co.: *See—*
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Smith, David B.; and Gribens, Joel A., 3,834,578.
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Graham, Patricia M.: *See—*
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Grant, Mooza V.P. Deterrent for self-destructive actions. 3,834,379, Cl. 128-132.00r.

Grant, Roy Arthur, to Tasman Vaccine Laboratory Limited. Process for the purification. 3,835,041, Cl. 210-27.000.

Grapha Maschinenfabrik Hans Muller AG: *See—*
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Graphic Engineers, Inc.: *See—*
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Behrens, Roy E.; and Donahue, Leo O., 3,834,289.

Grasman, Rudolf; Hell, Walter; and Mullner, Wilhelm, to Waagner-Biro A.G. Cable clamps. 3,833,971, Cl. 24-132.0wl.

Gravatt, Claude C., Jr., to United States of America, Commerce. System for determining parameters of a particle by radiant energy scattering techniques. 3,835,315, Cl. 250-218.000.

Green, David L.: *See—*
Nisenson, Stanley M.; and Green, David L., 3,834,978.

Green, Richard L., to Monsanto Company. Grease compositions having high tractive coefficients. 3,835,050, Cl. 252-28.000.

Green, Walter L.: *See—*
Abbatiello, Leonard A.; Carey, Loren E.; Ferree, Donald V.; and Green, Walter L., 3,834,256.

Greene, Frederick C., to Shepherd Products U.S. Inc. Method of assembling supporting pins within a caster wheel pivot boss bore. 3,834,006, Cl. 29-436.000.

Greene, Leonard M., to Safe Flight Instrument Corporation. Defective battery condition/charging system warning device. 3,835,362, Cl. 320-25.000.

Greer Hydraulics, Inc.: *See—*
Sedley, Bruce S., 3,834,197.

Gregory, David A.: *See—*
Gyongyosi, Laszlo; and Gregory, David A., 3,834,470.
Gyongyosi, Laszlo; and Gregory, David A., 3,834,718.

Greig, Alfred L., to IPT Corporation. Photocopying apparatus with vacuum means. 3,834,815, Cl. 355-91.000.

Grell, Helga U. Raincover for stroller with canopy. 3,834,756, Cl. 296-136.000.

Gressman, Norman J.: *See—*
Henzler, William G.; and Gressman, Norman J., 3,834,213.

Greven, Hendrik Marie; and De Wied, David, to Akzona Incorporated. Vasopression peptides having psychopharmacological activity. 3,835,110, Cl. 260-112.500.

Gribens, Joel A.: *See—*
Smith, David B.; and Gribens, Joel A., 3,834,578.

Grill, Hubert: *See—*
Kralowetz, Bruno; and Grill, Hubert, 3,834,218.

Grillo, Thomas A., to Huber, J. M., Corporation. Process for manufacturing surface modified inorganic pigments. 3,834,924, Cl. 106-308.00n.

Grimm, Werner: *See—*
Roth, Johann; and Grimm, Werner, 3,834,797.

Groezinger, Marlo W. Haystack feeder. 3,834,353, Cl. 119-60.000.

Gropper, Hans: *See—*
Stark, Jurt; Gropper, Hans; Urban, Friedrich; and Pfannmueller, Helmut, 3,835,107.

Grossel, Stanley S.; Cunninghame, Andrew L.; and Cooke, H. Sherwood, to Machlett Laboratories, Incorporated, The. Intensifier radiographic imaging system. 3,835,314, Cl. 250-213.0vt.

Grossman, David G.; and Rittler, Herman L., to Corning Glass Works. Ceramic and glass-ceramic articles produced from beta-spodumene. 3,834,981, Cl. 161-192.000.

Groswith, Charles T., III: *See—*
Abildgaard, William H.; and Groswith, Charles T., III, 3,834,739.

Grove, John L. Aerial platform with articulating jib. 3,834,488, Cl. 182-2.000.

Grubb, Willard T.; and King, Lawrence H., to General Electric Company. Oxygen sensor and electrode device therefor. 3,835,013, Cl. 204-195.00p.

Grudzinski, Michael, to Empire Abrasive Equipment Corporation. Abrasive blasting system with personnel protective features. 3,834,082, Cl. 51-12.000.

Gruner, Heinz Walter; and Heisig, Charles Gladstone, to Sybron Corporation. Electromagnetic flowmeter having self-cleaning electrodes. 3,834,232, Cl. 73-194.0em.

Gruttner, Alfred: *See—*
Specht, Hans; Kroll, Bruno; and Gruttner, Alfred, 3,834,518.

Gstohl, Norbert; and Tauern, Dankmar, to Hilti Aktiengesellschaft. Means for surface treating and welding to a metal. 3,835,284, Cl. 219-98.000.

GTE Automatic Electric Laboratories, Incorporated: *See—*
Bieszczad, Edward S.; Wedmore, William R.; and Young, John S., 3,835,466.
McLaughlin, Donald W., 3,835,257.
Prescher, Kenneth E.; Schauer, Ronald E.; and Sikorski, Frank B., 3,835,260.
Wilber, John A.; Rice, Verner K.; and Buhrke, Rolfe E., 3,835,312.

GTE Laboratories Incorporated: *See—*
French, Kenneth W.; Haugsjaa, Paul O.; and Heller, Adam, 3,835,345.
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GTE Sylvania Incorporated: *See—*
Cleveland, Joseph J.; and Fritsch, Carl W., Jr., 3,834,915.
Rhee, Dong Woo, 3,835,348.
Thompson, Wallace T., 3,835,406.
Torsch, Charles E., 3,835,426.

Guala, Piergiacomo, to Angelo Guala di Piergiacomo e Roberto Guala & C.S.A.S. Closure and pouring device for containers. 3,834,597, Cl. 222-525.000.

Gude, Gunther Max, to Meister-Werke GmbH. Arrangement on a zigzag or automatic sewing machine for the adjustment of the stitch position and width of the stitch. 3,834,332, Cl. 112-158.00a.

Guerrero, Paul: *See—*
Armitt, John; Guerrero, Paul; and Peterson, Robert J., 3,834,119.

Gulf Research & Development Company: *See—*
Bryson, Millard C.; McKinney, Joel D.; Titmus, Robert A.; and White, Frederick K., 3,835,023.
Frayer, James A.; and Stauffer, Harry C., 3,835,022.

Gullberg, Lars, to Oy Wartsila Ab. Speed regulating device including planetary gearing and a hydraulic unit of variable volume. 3,834,985, Cl. 162-280.000.

Gunson's Sertex, Limited: *See—*
Nelson, William B., 3,834,630.

Gurler, Tuygan: *See—*
Ball, Richard B.; Gurler, Tuygan; Clement, Carl J.; and Horine, David A., 3,834,041.

Gyongyosi, Laszlo; and Gregory, David A., to Ingersoll-Rand Company. Flexible hood means. 3,834,470, Cl. 175-211.000.

Gyongyosi, Laszlo; and Gregory, David A., to Ingersoll-Rand Company. Sealing means. 3,834,718, Cl. 277-166.000.

Gyro Tech Incorporated: *See—*
Catlett, John C., 3,834,081.

Haase, Victor H., to Evans, Robert G., Company. Saw blade hood leveling structure. 3,834,369, Cl. 125-13.0ss.

Hackbarth, Lowell Edwin: *See—*
Mays, Robert Kenneth; and Hackbarth, Lowell Edwin, 3,834,921.

Haeussler, Ernst. Device for mounting wall plates. 3,834,099, Cl. 52-235.000.

Hafener, Klaus: *See—*
Bergmeister, Eduard; Ludwig, Peter; Wiest, Hubert; and Hafener, Klaus, 3,835,086.

Hageman, Hendrik J.: *See—*
De Jonge, Cornelis R. H. I.; Mijs, William J.; and Hageman, Hendrik J., 3,835,095.

Hager, James R.; and Riordan, Hugh E., to Brunswick Corporation. Marine drive setting apparatus 6115/041.0ht. 3,834,345, Cl. .

Haggar Company: *See—*
White, Russell P., Jr., 3,834,813.

Hajek, Manfred: *See—*
Wagner, Kuno; and Hajek, Manfred, 3,835,191.

Hakansson, Sven Anders Samuel, to Kommanditbolaget United Stirling (Sweden) AB & Co. Heat exchangers for stirling cycle engines. 3,834,455, Cl. 165-87.000.

Hale, Jesse R. Sandwich core panel with structural decoupling between the outer face sheets thereof. 3,834,487, Cl. 181-33.00g.

Hall, John N., to Hercules Incorporated. Apparatus for forming blow molded container of oriented thermoplastic polymers. 3,834,852, Cl. 425-326.00b.

Hall, Norman T., to Liquid Nitrogen Processing Corporation. Glass-filled thermoplastic pellets suitable for blending with thermoplastic. 3,834,980, Cl. 161-176.000.

Hall, Peter Joseph, to Microfilm Recording Company Limited. Tape cartridge. 3,834,650, Cl. 242-192.000.

Hammel, Joseph J., to PPG Industries, Inc. Glass composition and method of making. 3,834,911, Cl. 106-39.700.

Hampton, Thomas L.: *See—*
Seiwert, David L.; and Hampton, Thomas L., 3,834,965.

Han, Grace Y.: *See—*
Carpino, Louis A.; and Han, Grace Y., 3,835,175.

Handziak, Louis J., to Schlitz, Joseph, Brewing Company. Rotary field switch means for machine apparatus. 3,835,460, Cl. 340-271.000.

Hankey, James J., to International Equipment Company, mesne. Centrifuge rotor with sample holding means and means for balancing the same. 3,834,613, Cl. 233-23.00a.

Hannah, Clifford George: *See—*
Mallinder, Frederick Paul; and Hannah, Clifford George, 3,834,832.

Hansen, Franklin A.: *See—*
Solter, Robert L.; and Hansen, Franklin A., 3,834,581.

Hanson, Casper H. Closet to pin measurer. 3,834,030, Cl. 33-138.000.

Hanzler Mfg. Corporation: *See—*
Henzler, William G.; and Gressman, Norman J., 3,834,213.

Hara, Hiroshi; Yokota, Yukio; Amano, Hiroyuki; and Nishimura, Tokio, to Fuji Photo Film Co., Ltd. Color silver halide photographic materials containing bis-pyrazolone color couplers. 3,834,908, Cl. 96-100.000.

Harada, Kanji: *See—*
Funabashi, Kazutoshi; and Harada, Kanji, 3,835,186.

Harben, Grover S., Jr., to Gainesville Machine Company, Inc. Method and apparatus for killing poultry. 3,833,966, Cl. 17-1.00e.

Harbor Island Machine Works, Inc.: *See—*
De Faccio, Paul L.; and West, Harold H., 3,834,120.

Harcourt, R. Earle, to Suitcase Shower Ltd. Self-locking hinge. 3,833,964, Cl. 16-145.000.

Hardesty, Edwin C., to Western Electric Company, Incorporated. Electrical connecting devices for terminating cords and methods of assembling the devices to cords. 3,835,445, Cl. 339-99.00r.

Hardinge Brothers, Inc.: *See—*
Parsons, Hubert J., 3,834,720.

Harford, Jack Rudolph, to RCA Corporation. Keyed AGC circuit. 3,835,248, Cl. 178-7.30r.

Harman, Robert W., to Chance, A.B., Company. Gas operable electrical connector and method. 3,835,441, Cl. 339-45.000.

Harmon, Richard C.: *See—*
Garretson, Oliver R.; and Harmon, Richard C., 3,835,381.

Harris Dynamics: *See—*
Harris, Trevor L., 3,834,733.

Harris, Trevor L., to Harris Dynamics. Velocipede. 3,834,733, Cl. 280-251.000.

Harris, William A.; Schluter, Bernard C.; and Tromborg, Erik T., to United States of America, Air Force. Ionization system for sensing and measuring gaseous impurities. 3,835,328, Cl. 250-432.000.

Harrison, David E. F., to Shell Oil Company. Microbiological process. 3,834,989, Cl. 195-28.00r.

Harrison, Ian T.: *See—*
Pfister, Jurg R.; Harrison, Ian T.; and Fried, John H., 3,835,139.
Pfister, Jurg R.; Harrison, Ian T.; and Fried, John H., 3,835,157.
Pfister, Jurg R.; Harrison, Ian T.; and Fried, John H., 3,835,158.

Hart, Porter, to Dow Chemical Company, The. Device and method of density measurement and control of flotation systems. 3,834,529, Cl. 209-1.000.

Hartemann, Pierre, to Thomson-CSF. Surface wave frequency discriminator. 3,835,422, Cl. 333-72.000.

Hartenbach, Walter. Bile duct endoprothesis. 3,833,940, Cl. 3-1.000.

Hartley, Ezra Dale. Compact reciprocating piston machine. 3,834,840, Cl. 417-535.000.

Hashimoto, Kazuyuki. Basketball gam amusement device. 3,834,701, Cl. 273-85.00c.

Hashizume, Shin; Kubota, Takashi; Usui, Katsuo; and Ogasahara, Hitosho, to Hitachi, Ltd. Cassette tape recorder. 3,834,651, Cl. 242-199.000.

Hata, Kazumi: *See—*
Fujisawa, Tamotsu; Kojima, Takakazu; and Hata, Kazumi, 3,835,196.

Haugen, Dorothy E., to Efficiency Products Company. Correction tape attachment for typewriters. 3,834,512, Cl. 197-181.000.

Haugen, Ronald L.: *See—*
Dussourd, Jules L.; and Haugen, Ronald L., 3,834,136.

Haugsjaa, Paul O.: *See—*
French, Kenneth W.; Haugsjaa, Paul O.; and Heller, Adam, 3,835,345.

Hauni-Werke Korber & Co. K.G.: *See—*
Schubert, Bernhard; and Blidung, Otto, 3,834,285.

Havera, Herbert John; and Strycker, Wallace Glenn, to Miles Laboratories, Inc. Diphenylhydantoin derivative. 3,835,151, Cl. 260-309.500.

Havlas, Jiri; Kostelecky, Premysl; and Sedlarik, Jaroslav, to Elitex, Zarody Textilniko Strojirenstvi generalni. Method of controlling the knotting procedure in textile machines, particularly automatic winding machines and pneumatic circuit for performing aid method. 3,834,634, Cl. 242-35.60r.

Havranek, Zdenek; Jiskra, Miroslav; Kubovy, Miroslav; Stary, Josef; and Vierikova, Vera, to Vyzkumny Sutav Bavlnarsky. Strand twisting arrangement for an open-ended yarn spinning system. 3,834,147, Cl. 57-58.890.

Hawkins, Arnold L.: *See—*
Savage, James G.; and Hawkins, Arnold L., 3,834,638.

Hawkins, Curtis Owen, to Du Pont de Nemours, E. I., and Company. Method. 3,834,251, Cl. 76-107.00s.

Hawkins. Robert S.: *See—*
Waldrop, Thomas E.; and Hawkins. Robert S., 3,834,118.

Hawley, Royal T.; and Hollytr, Richard S., to Western Gear Corporation. Drill string heave compensator and latching apparatus. 3,834,672, Cl. 254-172.000.

Hawthorne, David Geoffrey: *See—*
Hodgkin, Jonathan Howard; Hawthorne, David Geoffrey; Swift, Jean Drummond; and Solomon, David Henry, 3,834,923.

Hayashi, Takao; Kato, Hajime; and Ishige, Sadao, to Fuji Photo Film Co., Ltd. Color developer sheet for pressure sensitive recording paper. 3,834,929, Cl. 117-36.200.

Hayes, Robert A.: *See—*
Boutsicaris, Stephen P.; and Hayes, Robert A., 3,835,075.

Haynes, George R.: *See—*
Carr, John B.; Haynes, George R.; Albert, James R.; and Kodama, Jiro K., 3,835,132.

Haynes, Marguerite M.: *See—*
Overstreet, Vern C., 3,834,059.

Healey, Arthur Stephen. Building block. 3,834,100, Cl. 52-309.000.

Healy, Frank J.: *See—*
Geissler, Paul R.; and Healy, Frank J., 3,835,043.

Heaney, Donald F., to Dravo Corporation. Activated sewage plant and process. 3,835,038, Cl. 210-4.000.

Heath, Robert Boyson, to Rainsford Metal Products Proprietary Limited. Take-up spool latch. 3,834,646, Cl. 242-107.700.

Hebert, Paul W.: *See—*
Barney, Walter W., 3,835,301.

Heck, Daniel C.: *See—*
Fisher, Julian V.; and Heck, Daniel C., 3,833,953.

Heerdt, Ruth: *See—*
Weyer, Rudi; Hitzel, Volker; Aumuller, Walter; and Heerdt, Ruth, 3,835,188.

Hehl, Klaus Friedrich, to ITW-ATECO G.m.b.H. Apparatus for fastening the casing of a semiconductor component to a mounting plate. 3,833,991, Cl. 29-203.00b.

Heidtmann, Uwe: *See—*
Gammel, Gregor; Heidtmann, Uwe; and Muller, Elmar, 3,834,454.

Hein, Allyn J.; and Hendrickson, Vergil P., to Caterpillar Tractor Company. Override control for a variable displacement pump. 3,834,836, Cl. 417-222.000.

Heinen, Harold J.: *See—*
Eisele, Judith A.; and Heinen, Harold J., 3,834,896.

Heinze, Richard F.; and Herber, John F., to Monsanto Company. Functional fluid compositions. 3,835,056, Cl. 252-78.000.

Heisig, Charles Gladstone: *See—*
Gruner, Heinz Walter; and Heisig, Charles Gladstone, 3,834,232.

Heisterberg, Milton W., to General American Transportation Corporation. Fluid storage container. 3,834,576, Cl. 220-265.000.

Heiter, Carl B., Jr.: *See—*
Heiter, Mary H.; and Heiter, Carl B., Jr., 3,834,753.

Heiter, Mary H.; and Heiter, Carl B., Jr. Combination boat and utility trailer structure. 3,834,753, Cl. 296-10.000.

Heitman, Richard G., to De Laval Separator Company, The. Milking unit washer. 3,834,407, Cl. 134-56.00r.

Heitmann, William E.; and Oakwood, Thomas G., to Inland Steel Company. Hot rolled flat steel article for cryogenic service and method for producing same. 3,834,949, Cl. 148-12.000.
Helfen, Ralph K., to Mallory, P. R., & Co. Inc. Carrier current system. 3,835,389, Cl. 325-64.000.
Hell, Walter: *See—*
Grasman, Rudolf; Hell, Walter; and Mullner, Wilhelm, 3,833,971.
Heller, Adam: *See—*
French, Kenneth W.; Haugsjaa, Paul O.; and Heller, Adam, 3,835,345.
Hellman, Per Ingvar; and Sondell, Jan Ivar, to Stora Kopparbergs Bergslags Aktiebolag. Method and means for shaping a stream of melt flowing from a tapping hole. 3,834,629, Cl. 239-594.000.
Hellstrom, Bengt; Karsberg, Ulf; and Astrom, Ingmar, to Gotaverkens Angteknisko AB (Gotaverken Heat Engineering Co. Ltd.). Cyclone furnace having ash removal means. 3,834,327, Cl. 110-18.00r.
Helmig, Frank J.: *See—*
Alexander, George F.; Helmig, Frank J.; Oestmann, Eldon D.; and Sitton, Ellis A., 3,834,478.
Helwig, Hans, to Siemens Aktiengesellschaft. Particle-beam device equipped with means for attenuating mechanical movements. 3,835,320, Cl. 250-311.000.
Hemak, Thomas J., to Bendix Corporation, The. Protective shield for oxygen sensor. 3,835,012, Cl. 204-195.00s.
Hemingway, Maurice; and Ward, Trevor, to Hotwork Limited. Fluid fuel burners. 3,834,857, Cl. 431-158.000.
Hemmerling, Horst: *See—*
Von Jordan, Wenzel; Kleinhenz, Albert; Wiemer, Jean; and Hemmerling, Horst, 3,834,127.
Hemming, Raymond Charles; and Coumans, Harry Maria, to Northern Electric Company Limited. Anti-fraud device for coin operated apparatus. 3,834,504, Cl. 194-1.00g.
Henderson, Harold R. Arc-welding electrode. 3,835,288, Cl. 219-145.000.
Hendrickson, Vergil P.: *See—*
Hein, Allyn J.; and Hendrickson, Vergil P., 3,834,836.
Hengelhaupt, Hans-Georg, to Triumph Werke Nuernberg A.G. Ribbon transporting arrangement. 3,834,511, Cl. 197-151.000.
Hennings, Walter, to Arn. Jung Lokomotivfabrik GmbH. Two rail suspension railway with a linear motor. 3,834,316, Cl. 104-148.01m.
Henry, James L. Computation device. 3,834,042, Cl. 35-9.00c.
Henzler, William G.; and Gressman, Norman J., to Hanzler Mfg. Corporation. Workpiece translation mechanism for transfer die press. 3,834,213, Cl. 72-405.000.
Hepp, Wolfgang; Pimiskern, Klaus; and Herbert, Werner, to Dornier System GmbH. Process for making a spherical segment for a supporting member of a spiral groove bearing. 3,833,981, Cl. 29-148.40r.
Herber, John F.: *See—*
Heinze, Richard F.; and Herber, John F., 3,835,056.
Herbert, Werner: *See—*
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Hercules Incorporated: *See—*
Desmarais, Armand J., 3,835,074.
Hall, John N., 3,834,852.
Mellow, Dale F.; and Winer, Richard, 3,834,956.
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Herkert, Bernhard: *See—*
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Hermann, Hans Dieter: *See—*
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Hermstein, Wolfgang; and Maenicke, Eckart, to Siemens Aktiengesellschaft. Capacitive voltage-dividing arrangement for high voltage measuring apparatus. 3,835,353, Cl. 317-244.000.
Hermstein, Wolfgang; and Shciemann, Heinz, to Siemens Aktiengesellschaft. Current transformer. 3,835,429, Cl. 336-82.000.
Herr, Nicholas George. Needle. 3,834,599, Cl. 223-102.000.
Herron, Keith Roderick, to Kemp, James, & Co., Pty. Ltd. Sewerage air release valve. 3,834,415, Cl. 137-202.000.
Herron, William L.: *See—*
Adams, Kenneth D.; and Herron, William L., 3,834,334.
Herth, Walter; and Musfeldt, Theodor. Process for the construction of underpasses and an abutment for use therein. 3,833,960, Cl. 14-77.000.
Hess, Jurgen: *See—*
Linder, Ernst; Adalbert, Gerhard; and Hess, Jurgen, 3,834,846.
Hess, Peter, to Metallwerke Max Brose & Co. Adjustable seat inclination fitting. 3,833,965, Cl. 16-146.000.
Hettich, Alfred; and Stroezel, Reinhold, to Bosch, Robert, G.m.b.H. Hammer-drill. 3,834,468, Cl. 173-48.000.
Heyl & Patterson, Inc.: *See—*
Lofink, Gerard V., 3,834,552.
Heyl, Walter; Bergmann, Karl-Heinz; and Kern, Hermann, to Linde Aktiengesellschaft. Control system for axial-piston machines and the like. 3,834,281, Cl. 91-506.000.
Hidaka, Hiroyoshi: *See—*
Miyano, Tetsuji; Suzuki, Kunio; and Fukatsu, Hiroshi, 3,835,146.
Hidaka, Mikio: *See—*
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Hilfiker Pipe Co.: *See—*
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Hilfiker, William K., to Hilfiker Pipe Co. Pipe handling attachment for a backhoe. 3,834,566, Cl. 214-138.00r.
Hill, James D.: *See—*
Fowler, Raymond L.; Hill, James D.; McCornack, Richard W.; Perkins, N. Kenneth; Sendelweck, Michael L.; West, Donald L.; Williams, Thomas H.; and Yosmali, Krikor, 3,834,505.
Hilti Aktiengesellschaft: *See—*
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Hilton, Barney W.: *See—*
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Hinden, Alan W., to Promo-Pat Inc. Drawer and cabinet safety lock. 3,834,746, Cl. 292-290.000.
Hinden, Milton; and Giannone, Charles, to Duro-Dyne Corporation. Automatic resistance welder. 3,835,285, Cl. 219-98.000.
Hinderer, Helmut E.: *See—*
Bach, Hartwig C.; and Hinderer, Helmut E., 3,835,120.
Hinds, Ronald; and Akister, James Martin; deceased (by Akister, Nora; legal representative), to Carter, B. & F. & Co. Limited. Braiding machine. 3,834,271, Cl. 87-46.000.
Hinsche, Friedrich: *See—*
Spreckelmeyer, Bernhard; Hinsche, Friedrich; and Schabach, Werner, 3,834,917.
Hirdler, Louis C.; Schiessl, Henry W.; and Doonan, David F., to Olin Corporation. Recovery of chlorine and cyanuric acid values from polychloroisocyanuric acid and salts thereof. 3,835,136, Cl. 260-248.00a.
Hirose, Tatsuya: *See—*
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Hirsch, Winfred S., to Weck, Edward, & Company, Inc. Combination neurosurgical sponge. 3,834,390, Cl. 128-296.000.
Hisada, Hachiro, to Tokyo Toyo Rubber Industry Co., Ltd. Flexible diaphragms for gas meter. 3,834,231, Cl. 73-279.000.
Hisamatsu, Sadaoki: *See—*
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Hitachi, Ltd.: *See—*
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Hobbs, John V.: *See—*
Tannas, Lawrence E., Jr.; and Hobbs, John V., 3,835,465.
Hobza, Martin J. Standing occupant propelled merchandise carrier. 3,834,726, Cl. 280-87.04r.
Hocking, Martin B.; and Intihar, Donald J., to Dow Chemical Company, The. Method for the separation of ortho- and parp-dihydroxy benzene isomers. 3,834,997, Cl. 203-87.000.
Hocks, Peter: *See—*
Furst, Andor; Furlenmeier, Andre; Langemann, Albert; Waldovogel, Guy; Hocks, Peter; Kerb, Ulrich; and Wiechert, Rudolf, 3,835,127.
Hodges, Robert James, to Standard Telephones and Cables Limited. Electrographic apparatus for magnetic printing. 3,834,350, Cl. 118-637.000.
Hodgkin, Jonathan Howard; Hawthorne, David Geoffrey; Swift, Jean Drummond; and Solomon, David Henry, to Commonwealth Scientific and Industrial Research Organization. Titanium dioxide pigments and fillers. 3,834,923, Cl. 106-300.000.
Hoehn, Hans: *See—*
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Hoenig, Gerhard E.: *See—*
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Hoeschele, David F., Jr.; and Zubas, John D., to General Electric Company. Digital delta encoder and decoder. 3,835,385, Cl. 325-38.00b.
Hoeschele, Guenther Kurt: *See—*
Brown, Morton; Hoeschele, Guenther Kurt; and Witsiepe, William Kenneth, 3,835,098.
Hoffman, Joseph Adrian, to American Cyanamid Company. Poly-(phosphine oxide derivative) with ammonium poly-phosphate as a flame retardant composition for polymers. 3,835,119, Cl. 260-45.75r.
Hoffman, Wolfgang, to B & H Manufacturing Company, Inc. Method for applying labels to containers. 3,834,963, Cl. 156-215.000.
Hoffmann, Ambros S., to Avco Corporation. Spinner de-icing for gas turbine engines. 3,834,157, Cl. 60-39-9d.
Hoffmann-La Roche Inc.: *See—*
Furst, Andor; Furlenmeier, Andre; Langemann, Albert; Waldovogel, Guy; Hocks, Peter; Kerb, Ulrich; and Wiechert, Rudolf, 3,835,127.
Hofmann, Eberhard; and Lehmann, Hartmut, to Bosch, Robert, G.m.b.H. Centrifugal injection timing control device for fuel injection pumps in diesel engines. 3,834,184, Cl. 64-25.000.
Hohenschutz, Heinz; Franz, Dieter; Fuelow, Horst; and Dinkhauser, Guenter, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Production of propionic acid. 3,835,185, Cl. 260-533.00a.
Hokama, Takeo: *See—*
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Holben, Clair Dean; and Humphrey, John J., to Norgren, C. A., Co. Coupling unit for fluid control compenents. 3,834,417, Cl. 137-613.000.
Holfrook, Boyde: *See*—
Hunter, Roland L., 3,834,656.
Holland Company: *See*—
Chierici, Osvaldo F., 3,834,554.
Holley, Myle J., Jr. Slip-jointed pile and dolphin construction. 3,834,168, Cl. 61-46.000.
Hollingsworth, Elmont E.; and Storlie, Llewellyn O., to Deco Products Company; consisting of Charles, Andrew H., Henderson, Thomas J., Atkinson, Guy F., Company and Henderson, James A., Corporation. Circular hose clamp. 3,833,969, Cl. 24-23.00w.
Hollis, Clinton R., to International Paper Company. Method and apparatus for opening tubes of flexible material. 3,834,287, Cl. 93-35.00p.
Hollytr, Richard S.: *See*—
Hawley, Royal T.; and Hollytr, Richard S., 3,834,672.
Holmes, Andrew James Timothy; and Cozens, John Ritchie, to National Research Development Corporation. Gas-discharge tube for high-current pulsed operations. 3,835,343, Cl. 313-217.000.
Holmes, Robert S. Adjustable electronic tunable filter with simulated inductor. 3,835,399, Cl. 328-167.000.
Holstein & Kappert Maschinenfabrik Phonix GmbH: *See*—
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Holtkamp, Donald A.; Chichester, Willard L.; and Rabbitt, Robert R., to Clark Equipment Company. Extended reach truck. 3,834,569, Cl. 214-762.000.
Holzer, Walter K. Method and apparatus for speed regulation of alternating current motors. 3,835,357, Cl. 318-327.000.
Homme, Thomson-CSF. Inverters supplying a high frequency alternating current. 3,835,366, Cl. 321-45.00r.
Honda, Masatsugu; and Shinozaki, Masanobu, to Victor Company of Japan Limited. Transistor amplifier protective circuit. 3,835,412, Cl. 330-207.00p.
Honjo, Osamu: *See*—
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Honjo, Satoru: *See*—
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Hopkins, Walter M. Articulated sculling oar. 3,834,343, Cl. 115-28.00r.
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Horstmann, Josef: *See*—
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Hoshi, Kinji; and Sugita, Kazuhiro, to Sony Corporation. Machine for grinding an edge contour on a semiconductor wafer. 3,834,083, Cl. 51-57.000.
Hoshika, Susumu: *See*—
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Hosho, Yukio, to Hitachi Ltd. Automatic choke control. 3,834,677, Cl. 261-39.00b.
Hosoi, Fumio: *See*—
Kagiya, Tsutomu; Mitsui, Hiroshi; and Hosoi, Fumio, 3,835,004.
Hotwork Limited: *See*—
Hemingway, Maurice; and Ward, Trevor, 3,834,857.
Howard, Frank L.: *See*—
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Howarth, Graham Arton; and Hoyle, William, to Ciba-Geigy Corporation. Nitrofuryl-alpha-halo-hydrazones. 3,835,165, Cl. 260-347.500.
Howe, Gerald F. Disposable oil drip pan. 3,834,527, Cl. 206-494.000.
Howton, Kenneth Douglas: *See*—
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Hoya Glass Works, Ltd.: *See*—
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Hoyle, William: *See*—
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Hradcovsky, Rudolf J., to Kozak, Otto R. and Atlas Technology Corporation. Electrolytic production of glassy layers on metals. 3,834,999, Cl. 204-56.00r.
Hryck, Michael David: *See*—
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Hsieh, Chia-Lung: *See*—
Schoenrock, Karlheinz W. R.; Hsieh, Chia-Lung; and Rounds, Hugh G., 3,834,941.
Hubbard, Don P.; Levake, Richard N.; and Steiger, James A. Method and a machine for aligning and joining pipes. 3,833,996, Cl. 29-237.000.
Hubbell, Harvey, Incorporated: *See*—
Gartland, Albert J., Jr.; Carissimi, Vincent L.; and Riley, George A., 3,835,437.
Huber, J. M., Corporation: *See*—
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Takewell, Robert B.; Brandon, Paul W.; and Odom, Paul R., 3,834,850.
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Hubert, W., & Co. Machinefabriek N.V.: *See*—
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Huck Manufacturing Company: *See*—
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Hulbert, Clarence E., Jr. Multipurpose light assembly. 3,833,955, Cl. 9-83.00e.
Hummell, John D., to PPG Industries, Inc. Method for disposal of liquid waste. 3,834,055, Cl. 431-11.000.
Hummell, John D., to PPG Industries, Inc. Method for disposal of liquid waste. 3,834,855, Cl. 431-11.000.
Humphrey, John J.: *See*—
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Hunter, Chester: *See*—
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Hunter, Richard: *See*—
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Hunter, Roland L., 2% to Barrett, Mel, 1% to Olson, Milt, 1% to Furnes, Joe, 4% to Michial, Frank, 1% to Hunter, Richard, 1/2% to Fredricks, Don, 1/4% to Holfrook, Boyde, 1/4% to Walkley, Sherm, 1% to Samuels, Ed, 2% to Byrnes, Ed, 2% to Bell, Dick, 2% to ell, Dunham, 10% to Murrey, Ross, 1/3% to Colyer, Steve, 1% to Hunter, James, 1/3% to Hunter, Chester, 2% to Jeffs, Carley, 1/4% to Taylor, Dale, 1/2% to Jeffs, Gene and 25% to Dock & Dock, the firm of. Means for maintaining stability of rock drill by rearard bracing anchorage. 3,834,656, Cl. 248-13.000.
Huntington, Robert G., to American Air Filter Company, Inc. Damper. 3,834,662, Cl. 251-121.000.
Hurst, Fred J.; and Crouse, David J., to United States of America, Atomic Energy Commission. Oxidative stripping process for the recovery of uranium from wet-process phosphoric acid. 3,835,214, Cl. 423-10.000.
Hurwitz, Melvin D., to Rohm & Haas Company. Cigarette burn resistant mattresses having aluminized polyurethane foam layer. 3,833,951, Cl. 5-345.00r.
Huson, Gale, to Signode Corporation. Bale strapping system. 3,834,297, Cl. 100-3.000.
Hussissian, Vahan A. Method of flocculating. 3,835,045, Cl. 210-49.000.
Husted, Robert F.; and Radke, Rodney O., to Monsanto Company. Herbicidal compositions. 3,834,891, Cl. 71-109.000.
Hydraulic Products Incorporated: *See*—
Dorff, Donald; and Santi, Joseph A., 3,834,842.
Iacona, Marco J. Method of skirting a mobile home. 3,834,109, Cl. 52-742.000.
Ichikawa, Hiroshi, to Jintan Terumo Co., Ltd. Degassing device. 3,834,124, Cl. 55-159.000.
Ichiryu, Ken: *See*—
Miura, Masaki; Ichiryu, Ken; and Nakazawa, Hayashi, 3,834,513.
ICI America Inc.: *See*—
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Iida, Kosuke; Kanada, Nobuo; and Kurita, Takeji, to Takiron Co., Ltd. Synthetic resin coated pipe. 3,834,009, Cl. 29-477.000.
Iida, Wataru: *See*—
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Ikebe, Shigueaqui: *See*—
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Illinois Tool Works Inc.: *See*—
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Imbertson, N. M. & Associates, Inc.: *See*—
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Immer, Hans U.; Nelson, Verner R.; and Gotz, Manfred K., to American Home Products Corporation, mesne. Process for preparing the releasing hormone of Luteinizing hormone (LH) and of follicle stimulating hormone (FSH), salts and compositions thereof, and intermediates therefor. 3,835,108, Cl. 260-112.500.

Imperial Chemical Industries Limited: *See*—
Fairweather, John Anthony; and Dalton, Ronald James, 3,835,037.
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Sullivan, John Terence; and Littlefair, Robert George, 3,834,623.

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Industrial Research Products, Inc.: *See*—
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Inoue, Eiichi; Kokado, Hiroshi; Shimzu, Isamu; and Ohtsuka, Shuichi, to Fuji Photo Film Co., Ltd. Imagewise exposing a metal halide layer with laser to form permanent metal image. 3,834,903, Cl. 96-27.00e.

Inoue, Hiromitsu: *See*—
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Inoue, Komei; and Asami, Kazuto, to Glory Kogyo Kabushiki Kaisha. Control device for a coin-wrapping mechanism. 3,834,116, Cl. 53-59.00r.

Inoue, Mutsuhiro; and Inoue, Shunzo. Microfilm provided with color codes and device for recording and reproducing such codes. 3,835,297, Cl. 235-61.11e.

Inoue, Shunzo: *See*—
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Institut de Recherches de la Siderurgie Francaise: *See*—
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Paton, Boris Evgenievich; Lebedev, Vladimir Konstatinovich; Medovar, Boris Izrailevich; Latash, Jury Vadimovich; Bondarenko, Oleg Petrovich; Baglai, Viatly Mikhailovich; Sidorenko, Mikhail Nikolaevich; Leibenzon, Semen Abramovich; Kaganovsky, Gary Petrovic; Altgauzen, Andrei Pavlovich; Nikolsky, Leonid Evgenievich; Gorynina, Zoya Alexandrovna; Safronova, Ljudmila Andreevna; Katsevich, Leonid Savvich; Volokhonsky, Lev Avramovich; Nikulin, Alexandr Alexandrovich; Artemiev, Vladimir Dmitrievich; Edemsky, Vladiir Mikhailovich; and Voronin, Georgy Alexandrovich, 3,835,227.
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International Standard Electric Corporation: *See*—
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Kaczmarek, Leo W.; and Adamson, Charles E., 3,834,357.

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IPT Corporation: *See*—
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Itagaki, Tadashi, to Pioneer Electronic Corporation and Tokorozawa Electronics Corporation. Vibrating member for acoustic transducer. 3,835,265, Cl. 179-181.00r.

Itaya, Nobushige: *See*—
Matsuo, Takashi; Itaya, Nobushige; Okuno, Yositosi; Mizutani, Toshio; Ohno, Nobuo; and Kitamura, Shigeyoshi, 3,835,176.

Ito, Isao, to Nissin Precision Machine Co., Ltd. Electromagnetic chuck device. 3,835,428, Cl. 335-288.000.

Ito, Shingo: *See*—
Wada, Akihiro; and Ito, Shingo, 3,834,482.

Ito, Sigeki: *See*—
Matsumura, Kozo; and Ito, Sigeki, 3,834,925.

Ito, Yoshie; and Suda, Kataro. Amusement and game board with automatic dice casting means. 3,834,713, Cl. 273-145.00e.

Itohara, Fukuo: *See*—
Fujita, Hideo; Ishitobi, Masami; Suga, Hiroyoshi; Itohara, Fukuo; Matsushita, Michiharu; and Yamamoto, Hiroshi, 3,835,006.

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Hehl, Klaus Friedrich, 3,833,991.

Iwai, Takatsugu; and Takeda, Hiroshi, to Kajima Kensetsu Kabushiki Kaisha and Daichi Kogyo Seiyaku Kabushiki Kaisha. Decorative layer and a method of producing the same. 3,834,931, Cl. 117-45.000.

Izumitani, Tetsuro: *See*—
Asahara, Yoshiyuki; and Izumitani, Tetsuro, 3,834,913.

Jackson Communication Corporation: *See*—
Jackson, Richard L., 3,834,674.

Jackson, Herman Roy. Drycleaning compositions. 3,835,036, Cl. 208-249.000.

Jackson, John Maxwell, to Chromax Limited. Take off and stacker for container printing machine. 3,834,522, Cl. 198-210.000.

Jackson, Per Olof: *See*—
Ekstrom, Ake; Jackson, Per Olof; and Jansson, Lenhart, 3,835,365.

Jackson, Richard L., to Jackson Communication Corporation. Aerial blocks. 3,834,674, Cl. 254-190.00r.

Jaffe, Albert: *See*—
Brun, Andre; Jaffe, Albert; and De Panafieu, Philippe, 3,834,460.

Jaffe, Edward E., to Du Pont de Nemours, E. I., and Company. Production of chlorine-containing copper phthalocyanines. 3,834,922, Cl. 106-288.00q.

Jahn, Gerhard. Retaining means. 3,834,824, Cl. 402-13.000.

Jakenberg, Klas-Erik, to Uddeholms Aktiebolag. Trip steel for springs. 3,834,951, Cl. 148-36.000.

Jakobi, Wilhelm; and Voges, Bernd, to Koppers, Heinrich, GmbH. Regenerator construction. 3,834,864, Cl. 432-222.000.

James, Alec Patrick, to National Research Development Corporation. Ticket systems. 3,834,406, Cl. 133-2.000.

James, Earl W. Adjustable granular material dispenser. 3,834,593, Cl. 222-440.000.

James, Larry S., to Coleman Company, Inc., The. Pilot reclamation system for gas-fires forced draft heater. 3,834,856, Cl. 431-30.000.

Jamesbury Corporation: *See*—
Donnelly, James F., 3,834,663.

Janatka, Joseph: *See—*
Anderson, Norman R.; and Janatka, Joseph, 3,835,442.

Janda, Robert J., to Gammaflux, Inc. Method for drying moldable resins. 3,834,038, Cl. 34-1.000.

Janning, John L., to National Cash Register Company. Alignment film for a liquid crystal display cell. 3,834,792, Cl. 350-160.01c.

Jansa, Edward F. Fishing rod holder. 3,834,057, Cl. 43-21.200.

Jansson, Lenhart: *See—*
Ekstrom, Ake; Jackson, Per Olof; and Jansson, Lenhart, 3,835,365.

Japan Atomic Energy Research Institute: *See—*
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Japan Metals and Chemcials Co., Ltd.: *See—*
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Jaquay, Louis H.: *See—*
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Jasinski, Raymond J.: *See—*
Barna, Gabriel G.; and Jasinski, Raymond J., 3,835,009.

Jaster, Heinz; Kosky, Philip G.; and Staub, Fred W., to General Electric Company. Double valve vapor push pump. 3,834,835, Cl. 417-209.000.

Jaunarajs, Karlis L.; and Yang, Julie C., to Johns Manville Corporation. Method for the preparation of fibrous soluble calcium sulfate anhydrite. 3,835,219, Cl. 423-555.000.

Jaworski, Eugene: *See—*
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Jayne, Gerald John Joseph: *See—*
Elliott, John Scotchford; Jayne, Gerald John Joseph; and Folliard, Patrick James, 3,835,202.

Jefferson Chemical Company, Inc.: *See—*
Gipson, Robert Malone; Yeakey, Ernest Leon; and Peppel, William Jennings, 3,835,166.

Jeffery, Jeffery J.; and Walus, Aloysius N., to Du Pont de Nemours, E. I., and Company. Aqueous sealer composition of an epoxy ester resin of a maleinized drying oil fatty acid and an epoxy resin and an acrylic-epoxy ester graft copolymer. 3,835,076, Cl. 20-23.0ep.

Jeffs, Carley: *See—*
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Jeffs, Gene: *See—*
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Jenaer Glaswerke Schott & Gen.: *See—*
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Jenkins, Thomas E., to General Electric Company. Thermal growth compensation and mounting for plastic dishwasher tub. 3,834,783, Cl. 312-253.000.

Jennings, Roger G.: *See—*
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Jensen, Gary D.: *See—*
Mentone, Pat F.; Myers, Thomas I.; Jensen, Gary D.; and Miettunen, Robert E., 3,835,017.

Jensen, Henry E., to Eltra Corporation. Water cooled industrial battery. 3,834,945, Cl. 136-161.000.

Jepson, Robert M.: *See—*
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Jerchel, Dietrich: *See—*
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Johansson, Allan Hilbert, to AB Bahco Ventilation. Arrangement in heat exchangers. 3,834,171, Cl. 62-3.000.

Johansson, Uno Waldemar, to Teem Incorporated AB. Air conditioning unit. 3,834,453, Cl. 165-54.000.

Johncock, Allan W., to Standard Oil Company. Electronic speed governor for a turbine. 3,834,830, Cl. 415-30.000.

Johns Manville Corporation: *See—*
Jaunarajs, Karlis L.; and Yang, Julie C., 3,835,219.

Johnson & Johnson: *See—*
Gander, Robert Johns; and Potts, Richard McCrea, 3,835,090.

Johnson, Alfred D., to Sylvania Electric Products Inc. Cathode ray tube diplay assembly having diverse optical means therein. 3,835,251, Cl. 178-7.850.

Johnson, Ben C. Jr.: *See—*
Bilbro, James E.; and Johnson, Ben C. Jr., 3,834,458.

Johnson, David Emil, to Mobil Oil Corporation. Apparatus for butt welding thermoplastics sheets and films. 3,834,971, Cl. 156-507.000.

Johnson, Delp W. Method of threading a cable through panel and tube sections to make a folding structure. 3,834,005, Cl. 29-433.000.

Johnson, Melvin Harry: *See—*
Cochran, Stanley Robert; and Johnson, Melvin Harry, 3,833,976.

Johnson, Richard H., to Stone Container Corporation. Packaging machine and method. 3,834,114, Cl. 53-32.000.

Johnson, Robert B.; and Robert, Louis F., to Fibreboard Corporation. Bag packing apparatus. 3,834,115, Cl. 53-55.000.

Johnson Service Company: *See—*
Lederman, Warren A.; and Pawlak, Alfred J., 3,834,382.

Johnston, Edward J.; Macha, Frank J., Jr.; Knapp, William H.; and Peacock, Peter J., to International Harvester Company. Side delivery rake. 3,834,142, Cl. 56-377.000.

Johnston, Leland P. Creative optical artistic medium. 3,835,307, Cl. 240-1.000.

Jones, Alan Richardson, to Dade Reagents, Inc. Method and apparatus for storing digital information in fluid medium. 3,834,411, Cl. 137-1.000.

Jones, Brian Paul, to Lucas, Joseph, (Industries) Limited. Actuators for stroke control in hydraulic machines. 3,834,280, Cl. 91-505.000.

Jones, Dana C.; Cook, Cleo E.; and Murray, Alfred K., to General Motors Corporation. Servo temperature control valve for refrigeration system. 3,834,175, Cl. 62-196.000.

Jones, Robert H., to Beckman Instruments, Inc. Sampling apparatus. 3,834,588, Cl. .

Jonsson, Sven Jonas Roland. Apparatus for automatic electric arc welding. 3,835,287, Cl. 219-130.000.

Jordan, Anthony. Grease filter. 3,834,135, Cl. 55-444.000.

Jorgensen, Henning B.: *See—*
Bohnke, Ernest; and Jorgensen, Henning B., 3,834,992.

Joslyn, Larry James, to Sybron Corporation. Table top steam sterilizer. 3,834,872, Cl. 21-94.000.

Joslyn Mfg. and Supply Co.: *See—*
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Jujo, Yukio: *See—*
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Just, Jerome O., to Case, J. I., Company. Braking system for vehicles. 3,834,769, Cl. 303-6.00r.

Kabushiki Kaisha Circle Tekkojo: *See—*
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Kabushiki Kaisha Daikin Seisakusho: *See—*
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Kabushiki Kaisha Daini Seikosha: *See—*
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Kabushiki Kaisha Kohjin: *See—*
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Kabushiki Kaisha Komatsu Seisakusho: *See—*
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Kabushiki Kaisha Ricoh: *See—*
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Kabushiki Kaisha Suwa Seikosha: *See—*
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Kabushiki Kaisha Toyoda Jodoshokki Seisakusho: *See—*
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Kabushiki Kaisha Toyota Chuo Kenkyusho: *See—*
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Kaczmarek, Leo W.; and Adamson, Charles E., to International Telephone and Telegraph Corporation. Low-water cut off system. 3,834,357, Cl. 122-504.000.

Kaddatz, Bonnie E.: *See—*
Kaddatz, Sheldon L.; and Kaddatz, Bonnie E., 3,833,997.

Kaddatz, Sheldon L.; and Kaddatz, Bonnie E. Spool mounting tool. 3,833,997, Cl. 29-267.000.

Kaelin, Bette M.: *See—*
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Kagan, Morton Richard: *See—*
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Kagiya, Tsutomu; Mitsui, Hiroshi; and Hosoi, Fumio, to Japan Atomic Energy Research Institute. Acceleration of crosslinking in polyolefins by applied radiation in a gaseous atmosphere of fluorine-containing monomer and acetylene. 3,835,004, Cl. 204-159.170

Kahil, John E. Radiation insepection apparatus with adjustable shutter for inspecting different sizes of tubular goods. 3,835,323, Cl. 250-360.000.

Kahn, Manfred, to Sprague Electric Company. PTC resistor package. 3,835,434, Cl. 338-22.000.

Kaiser Aluminum & Chemical Corporation: *See—*
McDole, Ewell E.; and Howard, Frank L., 3,835,052.
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Kaiser Steel Corporation: *See—*
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Kaiserswerth, Hans-Peter; Wimmer, Josef; and Schaller, Rudolf, to Siemens Aktiengesellschaft. Dampened choke coil. 3,835,370, Cl. 323-78.000.

Kajima Kensetsu Kabushiki Kaisha: *See—*
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Kakimoto, Morio: *See—*
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Kaljuko, Alexei Yakovlevich; Simkhovich, Fridrikh Levikovich; Cherednik, Nina Fedorovna; Pravednaya, Ljudmila Dmitrievna; Kasakov, Alexei Mikhailovich; Saposhkov, Alexandr Mikhailovich; and Lischinsky, Anri Iosifovich. Explosion-proof cathode-ray tubes. 3,35,250, Cl. 178-7.800.

Kalns, Rudolph W.: *See—*
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Kamiya, Masahiko; Naya, Michiyoshi; and Hisamatsu, Sadaoki, to Isuzu Motors Limited. Alloy composed of iron, nickel, chromium and cobalt. 3,834,901, Cl. 75-128.00b.

Kammerlander, Karl: *See—*
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Kamp, Heinz; Wilms, Willi; and Reichardt, Volker, to Schlafhorst, W., & Co. Warp knitting mechine. 3,834,189, Cl. 66-84.00a.

Kampf, Eberhard, to Kampf, Erwin, Maschinenfabrik. Apparatus for winding tapes and films. 3,834,642, Cl. 242-75.500.

Kampf, Erwin, Maschinenfabrik: *See—*
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Kanada, Nobuo: *See—*
Iida, Kosuke; Kanada, Nobuo; and Kurita, Takeji, 3,834,009.

Kanai, Hiromi, to Hitachi, Ltd. Colour picture tube with improved color purity. 3,835,347, Cl. 313-408.000.

Kaneko, Tadasaburoh: *See—*
Mitsuoka, Shigeru; Kaneko, Tadasaburoh; and Igarashi, Tetsuo, 3,834,970.

Kano, Hideo; Ogata, Masuru; and Yukinaga, Hisajiro, to Shionogi & Co., Ltd. Quinone derivatives and compositions containing the same. 3,835,168, Cl. 260-396.00r.

Kansier, Denis A., to Ford Motor Company. Sling means for shoulder harness. 3,834,730, Cl. 280-150.0sb.

Kaplow, Robert L.: *See—*
Erickson, Allen M.; Kaplow, Robert L.; and King, W. Lawton, 3,834,795.

Karabedian, James A., to Owens-Illinois, Inc. Process of extruding a foamed extrudate and controlling the thickness thereof. 3,835,209, Cl. 264-51.000.

Karch, Walter C.; Marien, Kenneth J.; and Mierendorf, Robert C., to Square D Company. Electromagnetic relay with reversible switch modules. 3,835,425, Cl. 335-132.000.

Karimori, Akira; Kodama, Risaku; and Kato, Akio, to Kabushiki Kaisha Kohjin. Method of preparing flame resistant paper having a high delamination resistance. 3,834,937, Cl. 117-155.0ua.

Karsberg, Ulf: *See—*
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Kasper, Joseph G.: *See—*
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Kastenbein, Werner, to Ingold, Hans, & Co. Conveyor installation with transport containers. 3,834,319, Cl. 104-246.000.

Kataoka, Shoei, to Agency of Industrial Science & Technology. Method and apparatus for detecting uneven magnetic field by sweeping a plasma corrent across a semiconductor. 3,835,376, Cl. 324-43.00r.

Kataoka, Shoei, to Kohyo Gijutsuin. Three terminal magnetoresistive magnetic field detector in which voltages of opposite polarity relative to ground are applied to opposite ends. 3,835,377, Cl. 324-46.000.

Kato, Akio: *See—*
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Kato, Hajime: *See—*
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Kawachi, Sunao: *See—*
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Kawaguchi, Kiyoshi; Shoge, Kaoru; and Ono, Kenji, to Toyo Kohan Co., Ltd. Metal strip straightening machine. 3,834,202, Cl. 72-163.000.

Kawakubo, Kazuo: *See—*
Takahashi, Isao; Fujii, Motoharu; Kawakubo, Kazuo; Ariga, Masao; and Sugiura, Susumu, 3,834,808.

Kazlauskas, Gasparas, to Astro-Arc Co. Welding electrode structure and filler wire mechanism for an automatic welding apparatus. 3,835,286, Cl. 219-130.000.

Keady, Frederick D., to Weatherhead Company, The. Control valve for motor vehicle fluid power circuit. 3,834,162, Cl. 60-518.000.

Keely, William A., to Bendix Corporation, The. Back-up fuel control system. 3,834,361, Cl. 123-32.0ea.

Kehse, Wolfgang; and Jess, Uwe, to Extraktionstechnik Gesellschaft fur Anlagenbau GmbH. Continuous production of beer wort from dried malt. 3,834,296, Cl. 99-276.000.

Keihin Seiki Manufacturing Co., Ltd.: *See—*
Miyazaki, Toyoshige, 3,834,676.

Keith, Gareth A., to Masoneilan International, Inc. Control valve with elastically loaded cage trim. 3,834,666, Cl. 251-361.000.

Keith, John T.: *See—*
Arnold, Bruce K.; and Keith, John T., 3,835,443.
Keller, Rudolf: *See—*
Oxe, Josef; and Keller, Rudolf, 3,835,148.
Keller, Wolfgang: *See—*
Dietze, Wolfgang; Emeis, Reimer; Keller, Wolfgang; Muehlbauer, Alfred; and Reuschel, Konrad, 3,834,349.
Kelley, Jerry O., to Arvin Industries, Inc. Tape recording system. 3,834,601, Cl. 226-191.000.
Kelly, James E., to Mech-El Industries, Inc. Adhesive bonding system. 3,834,966, Cl. 156-379.000.
Kelly, Minton J.: *See—*
Parkinson, William W., Jr.; Kelly, Minton J.; and Sturm, Bernard J., 3,835,122.
Kelsey, Harley E., to Northern Purification Services Ltd. Aerobic wastewater treatment apparatus. 3,834,536, Cl. 210-104.000.
Kelton, Robert Lee. Imitation horns for steers. 3,834,354, Cl. 119-144.000.
Kemira Oy: *See—*
Ahonen, Heikki, 3,834,877.
Kemp, Horace N.: *See—*
Lee, Charles A.; Furbeck, Warren R.; and Kemp, Horace N., 3,834,689.
Kemp, James, & Co., Pty. Ltd.: *See—*
Herron, Keith Roderick, 3,834,415.
Kennecott Copper Corporation: *See—*
Peterson, Thomas D.; and Crosser, Ralph W., Jr., 3,834,534.
Queneau, Paul B.; and Prater, John D., 3,834,893.
Spedden, Henry Rush; and Malouf, Emil Edward, 3,834,760.
Spedden, Henry Rush; and Last, Arthur W., 3,834,894.
Kennedy, Carl D.: *See—*
McGuire, Stephen E.; Stauter, John C.; and Kennedy, Carl D., 3,834,533.
Kenney, Harold E.; Donahue, Edward T.; and Maerker, Gerhard, to United States of America, Agriculture. Cyanoethoxylated fatty acid metal soap thickened greases. 3,835,051, Cl. 252-33.600.
Kenney, James W.: *See—*
Robinson, John E.; and Kenney, James W., 3,834,590.
Kenney, James W., to Drummond Scientific Company. Apparatus for drawing liquids into, and expelling liquids from, a pipette or the like. 3,834,240, Cl. 73-425.600.
Keogh, Raymond J.: *See—*
Burr, Robert Page; and Keogh, Raymond J., 3,834,014.
Kerb, Ulrich: *See—*
Furst, Andor; Furlenmeier, Andre; Langemann, Albert; Waldovogel, Guy; Hocks, Peter; Kerb, Ulrich; and Wiechert, Rudolf, 3,835,127.
Kern, Hermann: *See—*
Heyl, Walter; Bergmann, Karl-Heinz; and Kern, Hermann, 3,834,281.
Kesler, Clyde E., to United States Steel Corporation. Fiber-reinforced cement composite. 3,834,916, Cl. 106-99.000.
Khaleeluddin, Khaja; Sutthoff, Robert Fredric; and Nelson, William Junior, to Standard Brands Incorporated. Method of refining an enzymatically produced fructose-containing solution. 3,834,940, Cl. 127-46.00a.
Kidda, Bernard G.: *See—*
Seregely, Daniel E.; and Kidda, Bernard G., 3,834,823.
Kieser, Lester C. Fish cleaning board. 3,833,967, Cl. 17-70.000.
Kikuchi, Yukio. Electric drill holder. 3,834,828, Cl. 408-92.000.
Kilbourn, Edward E., to Rohm & Haas Company. 3-Pyridylmethyl ester of 5-benzofurazanyl-carbamate-1-oxide. 3,835,147, Cl. 260-295.50b.
Killion, Mead Clifford, to Industrial Research Products, Inc. Microphone assembly operable in directional and non-directional modes. 3,835,263, Cl. 179-107.0fd.
Kimberly-Clark Corporation: *See—*
Schwarz, Eckhard C. A., 3,833,973.
Kimoto, Jitsumi: *See—*
Ueda, Kozo; Kimoto, Jitsumi; and Moritake, Mitsuru, 3,835,024.
Kimura, Sachio; Aoki, Yoshiaki; Kiriyama, Toshiki; and Shimomae, Katsuro, to Kabushiki Kaisha Koparu. Angular position selecting and controlling device for a rotary member. 3,835,359, Cl. 318-467.000.
Kimura, Yoshiaki, to Konishiroku Photo Industry Co., Ltd. Vertically diverged holographic image formation with zero-order diffraction suppression. 3,834,785, Cl. 350-3.500.
King, Earle C., to Mine Safety Appliances Company. Differential pressure transducer for liquid metals. 3,834,239, Cl. 73-398.00r.
King, Jack A., to Cities Service Oil Company. Oil spill control. 3,835,049, Cl. 210-63.000.
King, Lawrence H.: *See—*
Grubb, Willard T.; and King, Lawrence H., 3,835,013.
King Musical Instruments; a division of Seeburg Corporation of Delaware, The: *See—*
McCracken, George T., 3,834,268.
King, Thomas C. Spin breaking process. 3,834,631, Cl. 241-26.000.
King, W. Lawton: *See—*
Erickson, Allen M.; Kaplow, Robert L.; and King, W. Lawton, 3,834,795.
Kingsbury, William L., to General Motors Corporation. Exhaust gas recirculation control valve. 3,834,366, Cl. 123-119.00a.
Kinneging, Johannes Wilhelmus: *See—*
Berg, Leo; Lenemann, Gerhard Johann; and Kinneging, Johannes Wilhelmus, 3,834,622.
Kiriyama, Toshiki: *See—*
Kimura, Sachio; Aoki, Yoshiaki; Kiriyama, Toshiki; and Shimomae, Katsuro, 3,835,359.
Kirk, Dee Maryon: *See—*
Goodman, Roy S. Jr.; Kirk, Dee Maryon; and Kirk, Harvey D., 3,834,565.
Kirk, Harvey D.: *See—*
Goodman, Roy S. Jr.; Kirk, Dee Maryon; and Kirk, Harvey D., 3,834,565.
Kirk, Thomas E., to General Motors Corporation. Motor vehicle power supply system. 3,835,363, Cl. 320-64.000.
Kirkpatrick, Milton E.; and Mendelson, Ralph A., to TRW Inc. Method of forming powder compacts. 3,835,210, Cl. 264-61.000.
Kitai, Kiyoshi; Onda, Eiichi; Koyama, Mitsuo; Nagaoka, Shinji; and Nakagawa, Tadashi, to Seiko Koki Kabushiki Kaisha. Shutter blade operation mechanism for focal plane shutter. 3,834,802, Cl. 354-246.000.
Kitamura, Shigeyoshi: *See—*
Matsuo, Takashi; Itaya, Nobushige; Okuno, Yositosi; Mizutani, Toshio; Ohno, Nobuo; and Kitamura, Shigeyoshi, 3,835,176.
Kitazawa, Yoshio; Ariyoshi, Ikuji; Nagawa, Masato; and Terai, Kenji, to Nippon Steel Corporation. Magnetic conveyer. 3,834,519, Cl. 198-41.000.
Kiwiet, William B., to Tektronix, Inc. Numerical control system. 3,835,360, Cl. 318-561.000.
Kjell, Bergman: *See—*
Bengt, Fredrikson; and Kjell, Bergman, 3,834,587.
Klaassen, Dirk; Spadon, Luciano J.; and Tiessens, Meindert, to Stamicarbon N.V. Method of controlling a polymer preparation process. 3,835,106, Cl. 260-94.90p.
Klaudy, Peter, to Siemens Aktiengesellschaft. High speed electrical contact device including a rotating liquid contact element. 3,835,436, Cl. 339-5.001.
Klein, Albert Joseph, to American Can Company. Strip casting aluminum alloy. 3,834,900, Cl. 75-142.000.
Klein, Gerald B. Leader connector. 3,834,061, Cl. 43-44.900.
Klein, Michael B. Crown remover. 3,834,026, Cl. 32-43.000.
Klein, Richard M., to GTE Laboratories Incorporated. Encapsulation for light-emitting diodes. 3,834,883, Cl. 65-32.000.
Kleinhenz, Albert: *See—*
Von Jordan, Wenzel; Kleinhenz, Albert; Wiemer, Jean; and Hemmerling, Horst, 3,834,127.
KLI, Inc.: *See—*
Lampman, Russell A.; and Knepshield, William R., 3,834,392.
Klicki, Chester E.: *See—*
Surletta, Zygmunt M.; Klicki, Chester E.; and Nowack, Robert A., 3,833,948.
Knapp, William H.: *See—*
Johnston, Edward J.; Macha, Frank J., Jr.; Knapp, William H.; and Peacock, Peter J., 3,834,142.
Knapsack Aktiengesellschaft: *See—*
Berg, Leo; Lenemann, Gerhard Johann; and Kinneging, Johannes Wilhelmus, 3,834,622.
Knechtel, Wilhelm, to Canon Kabushiki Kaisha. Device for separating copy carriers from a roll, drum or the like by means of a suction roll. 3,834,690, Cl. 271-80.000.
Knepshield, William R.: *See—*
Lampman, Russell A.; and Knepshield, William R., 3,834,392.
Knohl, Friedrich K., to Illinois Tool Works Inc. Concrete insert. 3,834,103, Cl. 52-372.000.
Knol, Willem. Method and apparatus for determining the quanity of a bulk material deposited on a conveyor. 3,834,474, Cl. 177-1.000.
Kobayashi, Kazuo; and Ogawara, Shoichi, to Sukegawa Electric Co., Ltd. Level gauge of liquid metal. 3,834,234, Cl. 73-290.00r.
Koch, James Allan, to Deere & Company. Combined draft hook opreating and draft sensing. 3,834,738, Cl. 280-504.000.
Kochavi, Jacob. Method of making dental restorations and product thereof. 3,834,024, Cl. 32-8.000.
Kocsis, Laszlo, to Transelektro Magyar Villamossagi Kulkereskldelmi Vaelalat. Tubular core electric transformer. 3,835,430, Cl. 336-83.000.
Kodama, Jiro K.: *See—*
Carr, John B.; Haynes, George R.; Albert, James R.; and Kodama, Jiro K., 3,835,132.
Kodama, Risaku: *See—*
Karimori, Akira; Kodama, Risaku; and Kato, Akio, 3,834,937.
Koder, Robert, to Varta Aktiengesellschaft. Flashlight. 3,835,310, Cl. 240-10.650.
Koehring Company: *See—*
Wilke, Raud A., 3,834,163.
Koerper Engineering Associates, Inc.: *See—*
Putney, Gordon A., 3,834,927.
Koh-I-Noor Rapidograph, Inc., mesne: *See—*
Kuparinen, Lasse, 3,834,409.
Kohl, F. Johannes: *See—*
Fendel, Kurt; Bauer, Johann; and Kohl, F. Johannes, 3,835,105.
Kohyo Gijutsuin: *See—*
Kataoka, Shoei, 3,835,377.
Koizumi, Noboru: *See—*
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Kojima, Takakazu: *See—*
Fujisawa, Tamotsu; Kojima, Takakazu; and Hata, Kazumi, 3,835,196.
Kokado, Hiroshi: *See—*
Inoue, Eiichi; Kokado, Hiroshi; Shimzu, Isamu; and Ohtsuka, Shuichi, 3,834,903.

Koleczek, Roman A. V-shape blocks having flanges and notches for stacking. 3,834,067, Cl. 46-25.000.

Komatsu, Isamu, to Hitachi, Ltd. Method and apparatus for analyzing nitrogen oxides in gas. 3,835,322, Cl. 250-343.000.

Komine, Yoshio, to Canon Kabushiki Kaisha. Auto zoom device for a motion picture camera. 3,834,796, Cl. 350-187.000.

Kommanditbolaget United Stirling (Sweden) AB & Co.: *See*—
Hakansson, Sven Anders Samuel, 3,834,455.

Konen, Dolores A.: *See*—
Silbert, Leonard S.; and Konen, Dolores A., 3,835,203.

Kongelbeck, Sverre, to United States of America, Navy. Actuator and latch. 3,834,282, Cl. 92-10.000.

Konishiroku Photo Industry Co., Ltd.: *See*—
Kimura, Yoshiaki, 3,834,785.

Kopat Gesellschaft fur Konstruktion Entwicklung und Patentverwertung m.b.H., & Co., K.G.: *See*—
Ritter, Kaspar, 3,834,164.

Koppers Company, Inc.: *See*—
Reinfeld, Kurt, 3,834,684.
Van Ackeren, Joseph, 3,834,993.
Van Ackeren, Joseph, 3,834,995.

Koppers, Heinrich, GmbH: *See*—
Jakobi, Wilhelm; and Voges, Bernd, 3,834,864.

Kormendy, Ferenc; Nemeth, Ferenc; Muranyi, Istvan; and Balas, Gizella, to Labor Muszeripari Muvek. Device for use with a liquid transfer appliance in chemical analysis. 3,834,876, Cl. 23-259.000.

Kosky, Philip G.: *See*—
Jaster, Heinz; Kosky, Philip G.; and Staub, Fred W., 3,834,835.

Kostelecky, Premysl: *See*—
Havlas, Jiri; Kostelecky, Premysl; and Sedlarik, Jaroslav, 3,834,634.

Koutitonsky, Serge Iginai, to Esso Research and Engineering Company. Method for producing an integral skin phenolic foam. 3,835,208, Cl. 264-45.000.

Koyama, Mitsuo: *See*—
Kitai, Kiyoshi; Onda, Eiichi; Koyama, Mitsuo; Nagaoka, Shinji; and Nakagawa, Tadashi, 3,834,802.

Kozak, Otto R.: *See*—
Hradcovsky, Rudolf J., 3,834,999.

Kozinski, Richard C., to General Motors Corporation. Air conditioning system with multiple function heat exchanger. 3,834,451, Cl. 165-23.000.

Kraft, Elise; and Schlossman, Mitchell L. Lanolin derivatives essentially comprising esters of lanolin alcohol with lactic acid. 3,835,169, Cl. 260-397.200.

Kralowetz, Bruno. Forging press. 3,834,214, Cl. 72-407.000.

Kralowetz, Bruno; and Grill, Hubert, to GFM Gesellschaft fur Fretigungstechnik und Maschinenbau Aktiengesellschaft. Forging press. 3,834,218, Cl. 72-462.000.

Kramer, David E., to Woodhead, Daniel, Inc. Hand lamp with pivotable wire cage section. 3,835,311, Cl. 240-54.00r.

Krauss, Hans Gunter, to Elmeg-Electro-Mechanik GmbH. Reset device for digit drums in counters. 3,835,303, Cl. 235-144.0hc.

Krausser, Alfred: *See*—
Krausser, Heinz; and Krausser, Alfred, 3,834,704.

Krausser, Heinz; and Krausser, Alfred, to Edelmann, Carl, GmbH. Target with evaluating holes. 3,834,704, Cl. 273-102.00r.

Krebs, Frank; and Zimmermann, Frederick N., to March Manufacturing Company. Metering pump. 3,834,839, Cl. 417-505.000.

Krekeler, Claude B., to Cincinnati Mine Machinery Co., The. Core breaking means. 3,834,764, Cl. 299-86.000.

Kremkau, Ward Joseph, to AMP Incorporated. Crimping apparatus. 3,833,993, Cl. 29-203.00d.

Krestenyakov, Yordan Ivanov: *See*—
Valchev, Alexander Yordanov; Ninov, Emil Pantaleev; Peev, Vasil Georgiev; Velev, Velyu Todorov; Visokomogilski, Georgi Alexandrov; and Krestenyakov, Yordan Ivanov, 3,835,230.

Krippene, Brett C.; Clark, Merle M.; and Triffon, Apostol, to Babcock & Wilcox Company, The. Fuel burner. 3,834,858, Cl. 431-279.000.

Kristiansen, Odd, to Ciba-Geigy Corporation. Propanal derivatives. 3,835,173, Cl. 260-456.00a.

Kristiansen, Odd, to Ciba-Geigy Corporation. Propanal derivatives. 3,835,174, Cl. 260-456.00a.

Krjuchkova, Alexandra Pavlovna: *See*—
Lazareva, Elena Nikolaevna; Belozerova, Olga Petrovna; Efimova, Tamara Ivanovna; Sitnikova, Ljudmila Vladimirovna; and Krjuchkova, Alexandra Pavlovna, 3,835,190.

Krohn, Duane D.; and Culbertson, Samuel W., to Binks Manufacturing Company. High pressure electric fluid heater. 3,835,294, Cl. 219-305.000.

Kroll, Bruno: *See*—
Specht, Hans; Kroll, Bruno; and Gruttner,Alfred, 3,834,518.

Kronheim, John H.: *See*—
Walter, Henry J.; Kronheim, John H.; and Levine, Harvey, 3,835,292.

Krossa, Kenneth D.: *See*—
Ananiaes, Constantine S.; and Krossa, Kenneth D., 3,835,252.

Kroy Industries Inc., mesne: *See*—
Bradshaw, Franklin C., 3,834,507.

Krupsky, Michael R. Single suspension lounger. 3,834,757, Cl. 297-277.000.

Krusche, Kurt, to Allstar Verbrauchsgueter GmbH. & Co. Nozzle for vacuum cleaner. 3,833,962, Cl. 15-400.000.

Kublick, Christian, to Siemens Aktiengesellschaft. Voltage-frequency converter. 3,835,402, Cl. 328-181.000.

Kubota, Takashi: *See*—
Hashizume, Shin; Kubota, Takashi; Usui, Katsuo; and Ogasahara, Hitosho, 3,834,651.

Kubovy, Miroslav: *See*—
Havranek, Zdenek; Jiskra, Miroslav; Kubovy, Miroslav; Stary, Josef; and Vierikova, Vera, 3,834,147.

Kuchler, Fritz, to Brain Dust Patents Establishment. Discharge device for slicing machine. 3,834,259, Cl. 83-69.000.

Kuchler, Fritz, to Brain Dust Patents Establishment. Weighing system. 3,834,475, Cl. 177-25.000.

Kuhle, Engelbert: *See*—
Widdig, Arno; Kuhle, Engelbert; and Kaspers, Helmut, 3,835,164.

Kuhn, Falk, to Fouquet-Werk Frauz & Planck. Latch opener apparatus for knitting machines and particularly circular knitting machines. 3,834,190, Cl. 66-111.000.

Kulmburg, Alfred: *See*—
Swoboda, Karl; Kulmburg, Alfred; and Bloch, Rupert, 3,834,947.

Kummer, Joseph T.: *See*—
Gandhi, Haren S.; Kummer, Joseph T.; and Shelef, Mordecai, 3,835,069.

Kummerow, Jack A. C., to Storer, S. A., & Sons Company. Apparatus for fabricating modular wall sections. 3,834,973, Cl. 156-558.000.

Kunert, Max; and Sandhack, Lothar, to Deutsche Texaco Aktiengesellschaft. Process for the production of high purity normal paraffins. 3,835,025, Cl. 208-25.000.

Kuparinen, Lasse, to Koh-I-Noor Rapidograph, Inc., mesne. Cleansing receptacle for capillary writing pen parts. 3,834,409, Cl. 134-117.000.

Kurebayashi, Hidetoshi: *See*—
Orime, Nobutake; Kurebayashi, Hidetoshi; and Nakahara, Shojiro, 3,835,420.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See*—
Nakao, Masaaki; Shiiki, Zenya; and Amagi, Yasuo, 3,835,266.

Kurioka, Takashi. Water supply cock. 3,834,665, Cl. 251-349.000.

Kurita, Takeji: *See*—
Iida, Kosuke; Kanada, Nobuo; and Kurita, Takeji, 3,834,009.

Kurokawa, Junji; Watanabe, Toshio; and Asami, Tomiaki, to Kabushiki Kaisha Ricoh. Electrostatic latent image transferring apparatus for use in electrophotography. 3,834,810, Cl. 355-3.00r.

Kurokawa, Takaaki; Yamada, Junji; Hoshika, Susumu; and Jujo, Yukio, to Tokyo Shibaura Denki Kabushiki Kaisha. Apparatus for blow-molding hollow glassware in glass retaining unit. 3,834,884, Cl. 65-229.000.

Kus, Crawford M., to Veeder Industries Inc. Computing device. 3,835,305, Cl. 235-151.340.

Kwolek, John P.: *See*—
Rhee, Seong Kwan; and Kwolek, John P., 3,835,118.

La Croce, Leonard Thomas, to American Can Company. Container having a metal overcap-thermoplastic lid closure assembly. 3,834,579, Cl. 220-60.00r.

La Police, George D.; and Odermann, Charles R., to Singer Company, The. Belt guard for sewing machines. 3,834,335, Cl. 112-261.000.

La Roche, Ulrich: *See*—
Mast, Fred; and La Roche, Ulrich, 3,835,346.

Labana, Santokh S.; Golovoy, Amos; and Chang, Yun Feng, to Ford Motor Company. Method of making a color picture tube. 3,834,926, Cl. 117-17.000.

Labeau, Russell: *See*—
Swis, Philip E.; Labeau, Russell; and Brown, Glenn M., 3,834,221.

Labor Muszeripari Muvek: *See*—
Kormendy, Ferenc; Nemeth, Ferenc; Muranyi, Istvan; and Balas, Gizella, 3,834,876.

Lacroix, Serge R.: *See*—
Bourdolle, Henri M.; Lacroix, Serge R.; Fleury, Jean E.; Peuillot, Gilbert; and Pinot, Jean, 3,835,016.

Laigle, Roger E.; Rakich, Antone F.; and Sivakoff, William J., to Anaconda American Brass Company. Method and apparatus for forming an accurately dimensioned metal strip having varying thickness. 3,834,207, Cl. 72-241.000.

Lalancette, Jean Marc; and Coupal, Bernard, to Universite de Sherbrooke. Removal and recovery of chromium from polluted waters. 3,835,042, Cl. 210-28.000.

Laman, Joseph Richard, to Firestone Tire & Rubber Company, The. Floating anti-pollution apparatus. 3,834,538, Cl. 210-154.000.

Lamb, Kenneth E., to Professor, Inc., The. Racing board game apparatus. 3,834,709, Cl. 273-134.0ad.

Lamberet, Paul. Installation for manufacturing stratified isothermal panels. 3,834,968, Cl. 156-389.000.

Lambiris, Theodore, to General Motors Corporation. Method of assembly and joining shift indicator components. 3,834,007, Cl. 29-453.000.

Lamontagne, Edmond Joseph Honore. Portable press for reducing the size of tubing. 3,834,206, Cl. 72-211.000.

Lamp, Edward F.: *See*—
Mawhinney, Robert C.; Lamp, Edward F.; and Mulich, Stephen F., Jr., 3,834,311.

Lampman, Russell A.; and Knepshield, William R., to KLI, Inc. Laparoscopy system. 3,834,392, Cl. 128-303.130.

Lamprecht, Rudolf, to General Motors Corporation. Catalytic converter overheating protection. 3,835,433, Cl. 337-382.000.

Lancaster Level-Flo, Inc.: *See*—
Stoltzfus, Henry S.; and Stoltzfus, John S., 3,834,768.

Landis & G Y R AG: *See*—
Dyntar, Milos, 3,834,617.

Lane, Richard T. Quickly-collapsible shell fish trap. 3,834,064, Cl. 43-100.000.

Lang, Franz Josef, to Display-Design GmbH fur moderne Verkaufsforderungsmittel und Raumausstattung. Rack construction for the storage of articles. 3,834,324, Cl. 108-91.000.

Langemann, Albert: *See*—
Furst, Andor; Furlenmeier, Andre; Langemann, Albert; Waldovogel, Guy; Hocks, Peter; Kerb, Ulrich; and Wiechert, Rudolf, 3,835,127.

Langer, Alois: *See*—
Witte, Waldemar; and Langer, Alois, 3,835,309.

Lapeyre, Gabriel Ernest Rene. Device for fixing a dental prosthesis. 3,834,023, Cl. 32-5.000.

Lapper, Maurice Noel, to British Steel Corporation. Stock cutting measurement systems. 3,834,262, Cl. 83-345.000.

Laronze, Joseph, to Compagnie Electro Mecanique. Relative to linear induction motor and cooling device applied to the same. 3,835,339, Cl. 310-13.000.

Larson, Clarence E.; Dawley, Richard H.; and Reese, Roger H., to Martin Marietta Corporation. Portable bin carrier assembly. 3,834,568, Cl. 214-307.000.

Larson, Harry D.: *See*—
Tuffias, Robert H.; and Larson, Harry D., 3,834,775.

Larson, Lewis G., to Phillips Petroleum Company. Downflow cocurrent catalytic cracking. 3,835,029, Cl. 208-113.000.

Larson, Richard E., to Cherne Industrial, Inc. Sewer repair apparatus. 3,834,422, Cl. 138-97.000.

Last, Arthur W.: *See*—
Spedden, Henry Rush; and Last, Arthur W., 3,834,894.

Latash, Jury Vadimovich: *See*—
Medovar, Boris Izrailevich; Bagla, Vitaly Mikhailovich; Latash, Jury Vadimovich; Emelyanenko, July Georgievich; Fedorovsky, Boris Borisovich; Alferoy, Jury Fedorovich; and Abramovich, Evgeny Alexandrovich, 3,834,446.

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Latimer, Keith Graham: *See*—
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Laub, William G. Amplifier distortion circuit for electric guitars. 3,835,409, Cl. 330-13.000.

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Laurent, Michel A.; Lemoine, Jean M.; and Godderis, Georges L., to International Harvester Company. Control device for the combined operation of an unloader tube and auger clutch of a combine harvester. 3,834,564, Cl. 214-83.260.

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Lazareva, Elena Nikolaevna; Belozerova, Olga Petrovna; Efimova, Tamara Ivanovna; Sitnikova, Ljudmila Vladimirovna; and Krjuchkova, Alexandra Pavlovna. Chemical compound, N,N'-dibenzylethylenediaminodimethyltetracycline. 3,835,190, Cl. 260-559.000.

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Lebold, Steve. Easily removable orthopedic shoe platform. 3,834,377, Cl. 128-80.00g.

Lederman, Warren A.; and Pawlak, Alfred J., to Johnson Service Company. Fluidic respirator control system with patient triggering response means. 3,834,382, Cl. 128-145.800.

Lee, Charles A.; Furbeck, Warren R.; and Kemp, Horace N., to International Paper Company, mesne. Web folding apparatus. 3,834,689, Cl. 270-41.000.

Lee, Gim F., Jr., to General Electric Company. Composition of a polyphenylene ether, a rubber styrene graft copolymer and normally rigid block copolymer of a vinyl aromatic compound. 3,835,200, Cl. 260-876.00r.

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Leffler, Dennis Frank, to Pelton & Crane Company. Pedestal for a treatment chair. 3,834,660, Cl. 248-418.000.

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Leonhart, Xaver. Pocket billiard game apparatus. 3,834,706, Cl. 273-122.00r.

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Les Condensateurs Sic-Safco: *See—*
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Lewis, Sheldon N.; and Miller, George Allen, to Rohm & Haas Company. Derivatives of 3-isothiazolones with active halogen compounds. 3,835,150, Cl. 260-302.00a.

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Linick, Richard. Extensible toilet tissue roll holder. 3,834,636, Cl. 242-55.200.

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Linz, Albert. Vehicle mounted vibratory compactor. 3,834,827, Cl. 404-133.000.

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LoGiudice, Roberto C. Welder's mask. 3,833,936, Cl. 2-8.000.

LoGiudice, Roberto C. Welders's mask. 3,888,936, Cl. 2-8.000.

Logsdon, Duane D. Washing machine connection structure. 3,834,781, Cl. 312-229.000.

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Long, William R., to Long Mfg. N.C., Inc. Method and apparatus for harvesting and treating tobacco. 3,834,137, Cl. 56-27.500.

Longworth, Edward, Jr., to Paulding, John I., Inc. Self-grounding clip for the mounting strap of an electric switch or receptacle. 3,835,438, Cl. 339-14.00r.

Lonnee, Noble M. Self-locking price tag. 3,834,748, Cl. 292-320.000.

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Loomis, Phillip Eugene; and Morgan, Joe Pierce, to AMP Incorporated. Method and apparatus for disposing unassembled insulating housings in a predetermined position for facilitating placement of articles such as electrical connecting devices within said houings. 3,834,016, Cl. 29-630.00a.

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Lovelock, James E., to California Institute of Technology. Combined electrolytic hydrogen gas separator and generator for gas chromatographic systems. 3,835,019, Cl. 204-246.000.

Lowery, William E.; and Jennings, Roger G., to Control Building Systems, Inc. Apparatus for forming foamed panels. 3,834,967, Cl. 156-356.000.

Lowrance, Darrell J., to Lowrance Electronics, Inc. Light emitting diode readout. 3,835,447, Cl. 340-3.00r.
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Ludvigsen, Hans Thorkil. Building element. 3,834,108, Cl. 52-593.000.
Ludwig, Gary Joe; and Wood, Loren E., to Black, Sivalls & Bryson, Inc. Safety pressure relief device. 3,834,580, Cl. 220-89.00a.
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Luoni, Biagio, to USAG S.p.A. Trolley adapted to hold or to exhibit things or articles of different kinds. 3,834,725, Cl. 280-79.200.
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Macha, Frank J., Jr.: *See—*
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Maddox, Jim, Jr.; Zimmerman, Margaret J.; and Tuggle, Ray, to Texaco Inc. Demulsification compositions containing alkyl ether sulfates alkyl ether sulfates. 3,835,060, Cl. 252-332.000.
Madsen, Per, to Bendix Corporation, The. Laminated heat pipe and method of manufacture. 3,834,457, Cl. 165-105.000.
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Mahner, Helmut; and Kammerlander, Karl, to Siemens Aktiengesellschaft. System for two or more combined communication channels regulated in accordance with linear relationships. 3,835,392, Cl. 325-306.000.
Mahoney, James G. Eyeshield for horses. 3,834,121, Cl. 54-80.000.
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Marchner Jan, to Allmanna Svenska Elektriska Aktiebolaget. Charging means. 3,835,232, Cl. 13-10.000.
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Marquis, Byron; and Somerville, Robert, to Singmaster & Breyer. Manufacture of phosphoric acid. 3,835,215, Cl. 423-167.000.
Marron, Henry B., to Jerrold Electronics Corporation. Duplex cable communications network employing automatic gain control utilizing a band limited noise AGC pilot. 3,835,393, Cl. 325-308.000.
Martin, A. Robert. Electrically controlled ultra-micromanipulator. 3,835,338, Cl. 310-8.600.
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Masato, Tanabe, to Schering Corporation. 3'-Keto-2',3'-seco-1'(2')-yne steriodal derivatives, methods for their manufacture, and compounds produced thereby. 3,835,160, Cl. 260-340.900.
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Masterson, Joseph B.; and Lawler, John D., to General Cable Corporation. Adaptor for modifying connector to accomodate smaller conductors. 3,835,241, Cl. 174-87.000.
Matson, Chares Bernard, to Cincinnati, Milacron Inc. Wedge flow coolant nozzle for grinding machine. 3,834,088, Cl. 51-267.000.
Matsui, Masanao; and Okumo, Yositosi, to Sumitomo Chemical Company Limited. Insecticidal composition comprising vinylcyclopropanecarboxylates. 3,835,220, Cl. 424-17.000.
Matsumoto, Seiji; and Honjo, Satoru, to Fuji Shashin Film Kabushiki Kaisha. Copying process utilizing a transparent composite filter with elementary zones. 3,834,904, Cl. 96-27.00e.
Matsumoto, Yutaka. Foldable hanger. 3,834,598, Cl. 223-89.000.
Matsumura, Kozo; and Ito, Sigeki, to Nissha Printing Co., Ltd. Transfer material. 3,834,925, Cl. 117-3.400.
Matsuo, Takashi; Itaya, Nobushige; Okuno, Yositosi; Mizutani, Toshio; Ohno, Nobuo; and Kitamura, Shigeyoshi, to Sumitomo Chemical Company, Limited. Alpha-cyanobenzyl cyclopropanecarboxylates. 3,835,176, Cl. 260-465.00d.
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Matsushita, Michiharu: *See—*
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Matula, Jerry, to Pertec Corporation. Rotational position sensor utilizing a hall device and means to maintain the hall voltage constant. 3,835,373, Cl. 324-34.0ps.

Matz, Bjorn J., to Dictaphone Corporation. Privacy and seizure control circuit for a remote station dictating system. 3,835,261, Cl. 179-100.1dr.

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Maurer, Wilhelm. Shoe fastening. 3,834,048, Cl. 36-50.000.

Mawhinney, Robert C.; Lamp, Edward F.; and Mulich, Stephen F., Jr., to MB Associates. Cartridge. 3,834,311, Cl. 102-41.000.

May, Erhard Thaddaus, to Ott, A. Device for holding a spindle for drawing-off of a yarn. 3,834,647, Cl. 242-130.200.

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McAlister, Dale L. Electrical heating apparatus for generating superheated vapors. 3,835,293, Cl. 219-300.000.

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McCabe, Francis J. Method of fabricating and assembling a damper. 3,833,989, Cl. 29-157.00r.

McCarroll, Alan F., to Xerox Corporation. Pressure heated fuser assembly. 3,834,861, Cl. 432-60.000.

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McClellan, Amos E.; and Daugherty, Donald E., to Sperry Rand Corporation. Mechanism for securing and locking the posting board of a mechanized filing cabinet. 3,834,780, Cl. 312-219.000.

McClellan, Charles L.: *See—*
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McConnell, Lloyd T.; and Trimmier, John R., to Advance Technology Center, Inc. Dichromic mirror having multilayer thin films including vanadium dioxide. 3,834,793, Cl. 350-160.00r.

McCord, Carolyn Creel. Nurse's cap attachment system. 3,834,405, Cl. 132-101.000.

McCord, Wilfred M., Jr., to Vermont American Corporation. Dovetail fixture. 3,834,435, Cl. 141-144.500.

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McCracken, Nathan John, to Polymer Corporation Limited. Method for drying polymeric materials. 3,834,440, Cl. 159-47.00r.

McCraney, Thomas E.: *See—*
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McDevitt, John P.; and Chang, Marguerite S., to United States of America, Navy. . 3,834,957, Cl. Solvent process for productio.

McDole, Ewell E.; and Howard, Frank L., to Kaiser Aluminum & Chemical Corporation. Emulsion for hot rolling aluminum products. 3,835,052, Cl. 252-49.500.

McDonald, George B., to Control Data Canada, Ltd. Methods and apparatus for determining the thrust of a jet engine. 3,834,222, Cl. 73-117.400.

McDuffee, Charles M. Power Humidifier. 3,834,683, Cl. 261-138.000.

McFadden, Buryl L., Jr.: *See—*
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McGee, Leland T. Hydraulic trailer steering and sway control mechanism. 3,834,480, Cl. 180-79.20b.

McGilp, Kenneth J., to Excel Tool and Die Corporation. Motorcycle drive chain tensioner kit. 3,834,246, Cl. 74-242.11b.

McGrath, William K., to United States Steel Corporation. Method of erecting a cantiliver truss bridge;bridge; panel for a bridge; and dummy chords fsor panel. 3,833,959, Cl. 14-14.000.

McGuire, Stephen E.; Stauter, John C.; and Kennedy, Carl D., to Continental Oil Company. Concentration of oxide copper ores by flotation separation. 3,834,533, Cl. 209-166.000.

McKay, Robert H.: *See—*
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McKinney, Joel D.: *See—*
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McLaughlin, Donald W., to GTE Automatic Electric Laboratories, Incorporated. Method of recording data including sampling rate. 3,835,257, Cl. 179-8.00a.

McMurry, Everett D., to McMurry Oil Tools, Inc. Method and apparatus for gas-lift production of liquid from wells. 3,834,414, Cl. 137-155.000.

McMurry Oil Tools, Inc.: *See—*
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McPhee, Charles J., to American Hospital Supply Corporation. Mixing column for medical humidifier and method of humidifying inhalable gases. 3,834,682, Cl. 261-123.000.

McPhillips, Norris J., to Parker-Hannifin Corporation. Tube coupling. 3,834,742, Cl. 285-249.000.

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Meehan, John F. Water skate. 3,833,956, Cl. 9-310.00d.
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Meier, Gunter; Laubach, Winfried; and Horstmann, Josef. Mixer type car for transporting molten pig iron. 3,834,322, Cl. 105-367.000.
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Meyer, Holger, to Monsanto Company. Herbicidal compositions and methods employing mono, di and tripyridine complexes of organo tin compounds. 3,834,890, Cl. 71-94.000.
Meyer, Virginia M. Panic bar safety plate. 3,834,077, Cl. 49-50.000.
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Miller, Joseph. Adapter apparatus for tractor. 3,834,567, Cl. 214-145.000.
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Mirtain, Henri, to Uniroyal S.A. Asymmetric pneumatic vehicle tire. 3,834,439, Cl. 152-361.0fp.
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Moggio, William A., to Armstrong Cork Company. Conditioned slide surface for carpet printer. 3,834,308, Cl. 101-407.0bp.
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Montone, Liber J., to Western Electric Company, Incorporated. Thickness measuring. 3,834,819, Cl. 356-156.000.
Moody, Nahum. Hospital bed with removable bed pan. 3,833,945, Cl. 5-90.000.
Moon, Malcolm W.; and Rizzo, Victor L., to Upjohn Company, The. Herbicidal methods and compositions using 1'-variable-1; 1'-dihalohalobenzeneazomethanes. 3,834,892, Cl. 71-121.000.
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Moran, Paul R.; and Pearson, David W., to United States of America, Atomic Energy Commission. Method of measuring fast neutron flux using thermoluminescent dosimeter. 3,835,329, Cl. 250-484.000.
Morane, Bruno P.; Paoletti, Charles; Maurelli, Manlio; Merrien, Louis; and Sathicq, Robert, to L'Oreal. Pressure-responsive safety device for aerosol dispenser and containers equipped therewith. 3,834,589, Cl. 222-80.000.
Morat, Franz, GmbH, Firma: *See—*
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Morgan, Joe Pierce: *See—*
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Morishige, Toshinori, to Starting Industry Company Limited. Cord winding device. 3,834,645, Cl. 242-107.700.
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Moritz, Hans C.; and Schwarz, Robert, to United States of America, Department of Transportation. Hydraulic impact absorbing bumper. 3,834,686, Cl. 267-116.000.
Moritz, Scott N.; Polley, Eugene; and Puls, Werner H., to Zenith Radio Corporation. Video disc cutting using pressurized air to control depth of grooves. 3,835,262, Cl. 179-100.40c.
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Morrison, Robert B.; and Wyman, Lewis C., to Sheldon, E. H., and Company. Medicine tray for cabinet drawer. 3,834,778, Cl. 312-209.000.
Morton, Robert E., to Leesona Corporation. Bobbin alignment means. 3,834,427, Cl. 139-224.000.
Moser, Erwin; and Benda, Helmut, to Swiss Aluminium Ltd. Apparatus for cleaning exhaust air from a workshop. 3,834,132, Cl. 55-223.000.
Moshofsky, Jerome F. Scrap materials processor. 3,834,264, Cl. 83-356.300.
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Motoyama, Shimesu; and Yamada, Shuri, to Freund Ind. Co., Ltd. Tablet coating apparatus. 3,834,347, Cl. 118-19.000.
Mottel, Alan, to Consolidated Novelty Co., Inc. Method of making artificial branch assemblies and resulting artificial branch assembly. 3,834,976, Cl. 161-22.000.
Moulin, Norbert L., to Hughes Aircraft Company. Assembly tool for replacement of wire seal, electrical contact. 3,833,992, Cl. 29-203.00h.
Mrazek, Dale. Die temperature controlled programming of IC memory device. 3,835,458, Cl. 340-173.00r.
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Muller, Erich, to Andreas Stihl Maschinenfabrik. Drive clutch. 3,834,183, Cl. 64-15.00r.
Muller, Hans, to Grapha Maschinenfabrik Hans Muller AG. Apparatus for measuring the thickness of paper sheet stacks or the like. 3,834,031, Cl. 33-174.00r.
Muller, Karl-Heinz; Rindfleisch, Volker; Von Rauch, Moriz; Willasch, Dieter; and Dollmeier, Georg, to Siemens Aktiengesellschaft. Television display system for electromagnetic beam apparatus. 3,835,246, Cl. 178-6.800.
Muller, Otto, to Staubli Ltd. Method and apparatus for connecting the one ends of heddles or rather spring tie-rods to elastic draw cords in a jacquard machine. 3,834,426, Cl. 139-85.000.
Mullner, Wilhelm: *See—*
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Mulot, Georges C. Machine for automatically forming screw-threads. 3,834,255, Cl. 82-5.000.
Munakata, Hideaki; Watanabe, Kazuo; Arimatsu, Yoshikazu; and Tanaka, Masasazu, to Toyo Boseki Kabushiki Kaisha. Phosphorous acid and ester catalyzed formation of aminediol modified polyesters. 3,835,099, Cl. 260-75.00n.
Munro, Gerald Kirk, to Gorham Tool Company. Tool holder for indexable cutting inserts. 3,834,829, Cl. 408-179.000.
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Nakajima, Shigeo, to Taiheiyo Coal Mining Co., Ltd. Gate road dinting equipment. 3,834,762, Cl. 299-43.000.

Nakamura, Hiroshi; and Ohyama, Hiroaki, to Fujitsu Limited. Extracting circuit for reproducing carrier signals from a multiphase modulated signal. 3,835,404, Cl. 329-104.000.

Nakamura, Masakatsu; Yonezawa, Toshio; Kato, Taketoshi; Watanabe, Masaharu; and Akatsuka, Minoru, to Tokyo Sibaura Electric Co., Ltd. Semiconductor devices containing as impurities As and P or B and the method of manufacturing the same. 3,834,953, Cl. 148-86.000.

Nakao, Masaaki; Shiiki, Zenya; and Amagi, Yasuo, to Kureha Kagaku Kogyo Kabushiki Kaisha. Hollow carbonaceous microspheres suitable for use in carbon microphones. 3,835,266, Cl. 179-190.000.

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Nalepka, Walter H. Minnow bucket with movable means for grasping and holding bait. 3,834,062, Cl. 43-56.000.

Nanowsky, John P., to United States Steel Corporation. Control for crane hoist having a lift ram. 3,834,551, Cl. 212-39.0ms.

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Nayar, Harbhajan S., to Airco, Inc. Method of particle ring-rolling for making metal rings. 3,834,003, Cl. 29-420.500.

Nazaki, Kenzie, to Shell Oil Company. Process for preparing interpolymers of carbon monoxide and ethylenically unsaturated compounds. 3,835,123, Cl. 260-94.90b.

Neely, Joseph E.; and Cassens, Nicholas, Jr., to Kaiser Aluminum & Chemical Corporation. Refractory ramming mix. 3,834,914, Cl. 106-59.000.

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Nelson, John R. Assembly. 3,834,370, Cl. 126-137.000.

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Nelson, Victor R. Apparatus for counting and stacking sheet material. 3,834,290, Cl. 93-93.00c.

Nelson, William B., to Gunson's Sertex, Limited. Recovery of packaged contents. 3,834,630, Cl. 241-19.000.

Nelson, William Junior: *See—*
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Nessler, Andrei Maximilianovich; Raag, Frants Ivanovich; Savelieva, Maria Pavolovna; Vikhrova, Agrippina Gavrilovna; and Dmitriev, Leonid Sergeevich. Device for twisting natural and synthetic fibre yarns into a single thread. 3,834,146, Cl. 57-58.540.

Neumann, Gerhard Max, to Delbag-Luftfilter Gesellschaft mit beschrankter Haftung. Roller web filter for purification of gas. 3,834,131, Cl. 55-354.000.

Nevalainen, Harri P., to Ovako Oy. Low-carbon, high-strength structural steel with good weldability. 3,834,897, Cl. 75-124.000.

Newland, Tandy H., to General Motors Corporation. Weld bead removal procedure. 3,834,275, Cl. 90-24.00b.

Neyraud, Rene, to Verdol S.A. Double hooks for double-lift open-shed jacquard. 3,834,425, Cl. 139-65.000.

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Nickell, Claude H ., 50% to Weldon, Winfred D., 10% to Pinko, Manuel and 10% to Pianga, Adam. Air compressor with governor. 3,834,837, Cl. 417-298.000.

Niebylski, Leonard M., to Ethyl Corporation. Foamed metal article. 3,834,881, Cl. 29-197.500.

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Nisbet, Alexander, to Dawson & Usher Limited. Improvements in wire ropes, strands and wire ropes produced therefrom. 3,834,149, Cl. 57-145.000.

Nisenson, Stanley M.; and Green, David L., to Allied Chemical Corporation. Non-woven product. 3,834,978, Cl. 161-81.000.

Nishimura, Izuhiko; and Shimoi, Akio, to Kabushiki Kaisha Suwa Seikosha. Time correction device for electronic timpieces. 3,834,152, Cl. 58-23.00r.

Nishimura, Katsutoshi; Fujisawa, Kiyoji; and Yosumi, Toshikazu, to Matsushita Electric Industrial Co., Ltd. FM demodulation system. 3,835,405, Cl. 329-126.000.

Nishimura, Tokio: *See—*
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Nix, Alvin E.; and Maley, Edward F., to Tre-X Injector Systems Company. Tree trunk pressure feeding device. 3,834,075, Cl. 47-57.500.

Noble, Allen. Decimal point indicator for slide rule. 3,834,614, Cl. 235-64.300.

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Northern Electric Company Limited: *See—*
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Notteau, Jean-Luc, to Telecommunications Radioelectriques et Telephoniques T.R.T. Remote power supply for repeaters. 3,835,334, Cl. 307-69.000.

Novosad, Jan; Bazant, Vladimir; Smid, Vlastimil; and Majzlik, Ratibor, to Ceskoslovenska adademie ved. Apparatus for fluidizing powders. 3,834,624, Cl. 239-214.150.

Nowack, Robert A.: *See—*
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Nudeshima, Ichiro; and Nudeshima, Daisaku, to Mitsubishi Kasei Kogyo Kabushiki Kaisha; a/k/a Mitsubishi Chemical Industries Limited. Casing adapted to accommodate and transport bottles. 3,834,574, Cl. 217-19.000.

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N.V. Chemische Fabriek Naarden: *See—*
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Nystrand, Ernst Daniel, to Paper Converting Machine Company. Plybonding method, apparatus and product. 3,834,286, Cl. 93-1.100.

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Obergfell, Allen R., to Fastener Corporation. Fastener driving tool. 3,834,602, Cl. 227-120.000.

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O'Brien, Thomas Francis, to Penn-Olin Chemical Company. Ion exchange removal of dichromates from electrolytically produced alkali metal chlorate-chloride solutions. 3,835,001, Cl. 204-95.000.

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Ohasi, Hiroshi; Okamoto, Shinsuke; Inoue, Hiromitsu; Mori, Hirokazu; and Okamoto, Mineo, to Matsushita Electric Works, Ltd. Ultrasonic transmitting and receiving device. 3,835,254, Cl. 179-1.00e.

Ohlson, Stuart A. Building construction and method. 3,834,095, Cl. 52-122.000.

Ohnishi, Masaru: *See—*
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Ohno, Nobuo: *See—*
Matsuo, Takashi; Itaya, Nobushige; Okuno, Yositosi; Mizutani, Toshio; Ohno, Nobuo; and Kitamura, Shigeyoshi, 3,835,176.

Ohringer, Jack G. Stress indicating bolt. 3,834,269, Cl. 85-62.000.

Ohsumi, Yoshiro: *See—*
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Ohtsuka, Shuichi: *See—*
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Ohtsuka, Tetsuro: *See—*
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Ohyama, Hiroaki: *See—*
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Oka, Takashi; Arima, Tatsuhiro; and Noda, Tugio, to Nissan Motor Company, Limited. Sealing unit for pressurized gas generator of automotive safety device. 3,834,729, Cl. 280-150.0ab.

Okada, Jujiro; and Satoo, Isamu. Apparatus to draw an oval. 3,834,028, Cl. 33-30.00g.

Okada, Syoji, to Nippon Piston Ring Co., Ltd. Spacer expander with guide rod for preventing overlapping of the ends of the spacer expander. 3,834,716, Cl. 277-9.000.

Okamoto, Mineo: *See—*
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Olson, Milt: *See—*
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Oppmann, Richard C., to General Motors Corporation. Voltage generating circuit for a gas turbine fuel control system. 3,834,158, Cl. 60-39.28r.

Orime, Nobutake; Kurebayashi, Hidetoshi; and Nakahara, Shojiro, to Mitsubishi Denki Kabushiki Kaisha. Isolator. 3,835,420, Cl. 333-24.200.

Orloff, Lawrence; De Ris, John N.; and Coons, John D., to Factory Mutual Research Corporation. Automatic fire protection system for low temperature environments. 3,834,462, Cl. 169-17.000.

Ormiston, Robert B.: *See—*
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Oshida, Yoshitada, to Hitachi, Ltd. Method and apparatus for making holography memory. 3,834,787, Cl. 350-3.500.

Ost, Walter; Thomas, Klaus; and Jerchel, Dietrich, to Boehringer, C. H. Sohn. Formamide derivatives. 3,835,184, Cl. 260-562.00a.

Oswald, Hendrikus J.; and Thiruvillakkat, Krishnan, to Allied Chemical Corporation. Melt blends of carboxylic acid terminated, low molecular weight polyamide and polyvalent metal compounds. 3,835,101, Cl. 260-78.0sc.

Ott, A.: *See—*
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Ottensener Eisenwerk GmbH: *See—*
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Outboard Marine Corporation: *See—*
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Siler, Charles A., 3,834,845.

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Overby, Sune Lambert, to Telefonaktiebolaget LM Ericsson. Semiconductor transducer comprising an electret. 3,835,264, Cl. 179-110.00b.

Overstreet, Vern C., to Haynes, Marguerite M. Releasable sinker using water-soluble material and resilient attaching means. 3,834,059, Cl. 43-34.120.

Owen, Tom E., to Hudson Products Corparation. Finned tubes for use in heat exchangers. 3,833,987, Cl. 29-157.30a.

Owens, Thaddeus E., mesne: *See—*
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Oy Wartsila Ab: *See—*
Gullberg, Lars, 3,834,985.

Ozaki, Shigetsugu: *See—*
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Pacht, Amos; and Magee, Hubert E. Jr., to Partek Corporation of Houston. Fluid delivery system. 3,834,621, Cl. 239-76.000.

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Palitex-Project Company GmbH: *See—*
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Palmer, J. F. Shock absorbing bumper system. 3,834,483, Cl. 180-91.000.

Palmieri, Joseph; and French, Douglas M., to Westport International, Inc. Plural channel FM remote control system. 3,835,454, Cl. 340-171.00r.

Pampinella, Albert N. Toilet article container. 3,834,782, Cl. 312-248.000.

Panton, Verner. Furniture. 3,834,759, Cl. 297-445.000.

Paoletti, Charles: *See—*
Morane, Bruno P.; Paoletti, Charles; Maurelli, Manlio; Merrien, Louis; and Sathicq, Robert, 3,834,589.

Papay, Joseph, to Electrohome Limited. Control network. 3,834,649, Cl. 242-191.000.

Paper Converting Machine Company: *See—*
Nystrand, Ernst Daniel, 3,834,286.

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Parekh, Kantilal G.: *See—*
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Parisi, Frank E., to Adams-Russell Co., Inc. Broadband waveguide with means for suppressing TE20 mode. 3,835,423, Cl. 333-98.00m.

Park-Ohio Industries, Inc.: *See—*
Cachat, John F., 3,834,895.

Parker, Edward T., to BASF Wyandotte Corporation. Solid defoamer for starch. 3,834,919, Cl. 106-214.000.

Parker-Hannifin Corporation: *See—*
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Parkinson, William W., Jr.; Kelly, Minton J.; and Sturm, Bernard J., to United States of America, Atomic Energy Commission. Novel polystyrene product having rapid-post-irradiation decay of conductivity and process of making same. 3,835,122, Cl. 260-78.50t.

Parkison, Richard G., to American Standard Inc. Ceramic disc faucet valve. 3,834,416, Cl. 137-550.000.

Parsons, Hubert J., to Hardinge Brothers, Inc. Self-centering jaw chuck. 3,834,720, Cl. 279-1.001.

Partek Corporation of Houston: *See—*
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Pascaud, Xavier: *See—*
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Paschal, Forrest A.; and Stuart, Gerald L., to Forrest Paschal Machinery Company. Brick unloader-stacker apparatus. 3,834,298, Cl. 100-7.000.

Pass, Roger D. Method of stringing a game racket. 3,834,699, Cl. 273-73.00d.

Patenaude, Raymond Arthur; and Tonseth, Ivar Scott, Jr., to General Electric Company. Multibarrel automatic weapon. 3,834,272, Cl. 89-12.000.

Patin, Pierre. Variable speed drive system. 3,834,520, Cl. 198-110.000.

Paton, Boris Evgenievich; Lebedev, Vladimir Konstatinovich; Medovar, Boris Izrailevich; Latash, Jury Vadimovich; Bondarenko, Oleg Petrovich; Baglai, Vitaly Mikhailovich; Sidorenko, Mikhail Nikolaevich; Leibenzon, Semen Abramovich; Kaganovsky, Gary Petrovic; Altgauzen, Andrei Pavlovich; Nikolsky, Leonid Evgenievich; Gorynina, Zoya Alexandrovna; Safronova, Ljudmila Andreevna; Katsevich, Leonid Savvich; Volokhonsky, Lev Avramovich; Nikulin, Alexandr Alexandrovich; Artemiev, Vladimir Dmitrievich; Edemsky, Vladiir Mikhailovich; and Voronin, Georgy Alexandrovich, to Institut Elektrosvarki IM. E. O. Patona. Electroslag remelting system with wqualized plural electrode remelting. 3,835,227, Cl. 13-9.000.

Paton, Boris Evgenievich; Lebedev, Vladimir Konstatinovich; Medovar, Boris Izrailevich; Latash, Jury Vadimovich; Bondarenko, Oleg Petrovich; Baglai, Vitaly Mikhailovich; Sidorenko, Mikhail Nikolaevich; Leibenzon, Semen Abramovich; Kaganovsky, Gary Petrovic; Altgauzen, Andrei Pavlovich; Nikolsky, Leonid Evgenievich; Gorynina, Zoya Alexandrovna; Safronova, Ljudmila Andreevna; Katsevich, Leonid Savvich; Volokhonsky, Lev Avramovich; Nikulin, Alexandr Alexandrovich; Artemiev, Vladimir Dmitrievich; Edemsky, Vladiir Mikhailovich; and Voronin, Georgy Alexandrovich, to Institut Elektrosvarki IM. E. O. Patona. Method for electroslag remelting with equalized plural electrode remelting. 3,835,228, Cl. 13-9.000.

Paton, Boris Evgenievich; Lebedev, Vladimir Konstatinovich; Medovar, Boris Izrailevich; Latash, Jury Vadimovich; Bondarenko, Oleg Petrovich; Baglai, Vitaly Mikhailovich; Sidorenko, Mikhail Nikolaevich; Leibenzon, Semen Abramovich; Kaganovsky, Gary Petrovic; Altgauzen, Andrei Pavlovich; Nikolsky, Leonid Evgenievich; Gorynina, Zoya Alexandrovna; Safronova, Ljudmila Andreevna; Katsevich, Leonid Savvich; Volohonsky, Lev Avramovich; Nikulin, Alexandr Alexandrovich; Artemiev, Vladimir Dmitrievich; Edemsky, Vladimr Mikhailivich; and Voronin, Georgy Alexandrovich, to Institut Elektrosvarki IM. E. O. Patona. System for electroslag remelting and process and method thereof. 3,835,229, Cl. 13-9.000.

Patterson, Maurice M.; and Sheffield, Bass C., to Shell Oil Company. Method for determining liquid production from a well. 3,834,227, Cl. 73-155.000.

Paul, Dennis D. Smoking pipe. 3,834,402, Cl. 131-205.000.

Paulding, John I., Inc.: *See—*
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Paulin, Jean, to Ugine Carbone. Method of mounting rings of hard sintered metal on a rolling cylinder. 3,833,982, Cl. 29-148.40d.

Paulson, Harold E. Printing press feed mechanism. 3,834,691, Cl. 271-100.000.

Pavljuk, Boris Andreevich: *See—*
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Pecorella, Saviour S.; and Shotkin, Robert, to Becton, Dickinson and Company. Disposable temperature indicator. 3,834,226, Cl. 73-150.00a.

Pedinoff, Melvin E., to Hughes Aircraft Company. Colinear heterodyne frequency modulator. 3,834,816, Cl. 356-28.000.

Peev, Vasil Georgiev: *See—*
Valchev, Alexander Yordanov; Ninov, Emil Pantaleev; Peev, Vasil Georgiev; Velev, Velyu Todorov; Visokomogilski, Georgi Alexandrov; and Krestenyakov, Yordan Ivanov, 3,835,230.

Pekkarinen, Michael O., to Baxter Labortories, Inc. Disposabe humidifier. 3,834,385, Cl. 128-194.000.

Pellegrini, Giovanni: *See—*
Arsura, Emilio; Baruffini, Agostino; Giald, Franco; Pellegrini, Giovanni; Ponci, Riccardo; and Scrivani, Pietro, 3,835,189.

Pelto, Clarence H. Rail or truss stairway. 3,834,491, Cl. 182-106.000.

Pelton & Crane Company: *See—*
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Penetryn Products, Inc.: *See—*
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Penn-Olin Chemical Company: *See—*
O'Brien, Thomas Francis, 3,835,001.

Penny, Robert Noel. Rotary regenerative heat exchanger. 3,834,450, Cl. 165-8.000.

Peppel, William Jennings: *See—*
Gipson, Robert Malone; Yeakey, Ernest Leon; and Peppel, William Jennings, 3,835,166.

Perdue, Phillip T.: *See—*
Thorngate, John A.; and Perdue, Phillip T., 3,835,331.

Periman, Rubie E. Fishing rod beeper. 3,835,462, Cl. 340-279.000.

Perkel, Harold, to RCA Corporation. Closed loop roll and yaw control for satellites. 3,834,653, Cl. 244-1.0sa.

Perkins, Lee E. Jarring accelerator. 3,834,472, Cl. 175-321.000.

Perkins, N. Kenneth: *See—*
Fowler, Raymond L.; Hill, James D.; McCornack, Richard W.; Perkins, N. Kenneth; Sendelweck, Michael L.; West, Donald L.; Williams, Thomas H.; and Yosmali, Krikor, 3,834,505.

Pernod S.A.: *See—*
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Pertec Corporation: *See—*
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Petcoa Industries, Inc., mesne: *See—*
Schmidt, Walter E., 3,834,351.

Peter, Klaus Dieter, to Fried. Krupp Gesellschaft mit beschrankter Haftung. Multi-stage evaporator. 3,834,994, Cl. 202-174.000.

Peters, Donald E. Floating space frame. 3,834,336, Cl. 114-.50f.

Peters, Leo. Tear strip sealing structure for blister packages. 3,835,224, Cl. 426-130.000.

Peters, Leonhard: *See—*
Schiller, Werner; Obladen, Peter; and Peters, Leonhard, 3,834,216.

Peters, Raymond W. Magnetically supported vehicle engine warmer. 3,835,290, Cl. 219-205.000.

Peterson, Carl G., Co.: *See—*
Sauveur, Omer G.; and Adams, Rudolph J., 3,834,643.

Peterson, Christine M.: *See—*
Allison, Jean B.; Bissada, Kadry K.; and Peterson, Christine M., 3,834,122.

Peterson, Fred M. Universal high pressure regulator. 3,834,413, Cl. 137-116.000.

Peterson, Kenneth M., to Puritan-Bennett Corporation. Compliance compensated ventilation system. 3,834,381, Cl. 128-145.600.

Peterson, Robert J.: *See—*
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Peterson, Thomas D.; and Crosser, Ralph W., Jr., to Kennecott Copper Corporation. Variable mode vibratory screen. 3,834,534, Cl. 209-326.000.

Peterson, Wilmer R.: *See—*
Triplett, Lee Magna; and Peterson, Wilmer R., 3,834,270.

Pethica, Brian Anthony: *See—*
Cheng, Wai Ming; Davies, James Francis; and Pethica, Brian Anthony, 3,835,057.

Petro-Tex Chemical Corporation: *See—*
Schwartz, Andrew K., Jr.; and Rabago, Tony, Jr., 3,835,199.

Peuillot, Gilbert: *See—*
Bourdolle, Henri M.; Lacroix, Serge R.; Fleury, Jean E.; Peuillot, Gilbert; and Pinot, Jean, 3,835,016.

Peytavin, Pierre, to Societe Anonyme dite: Vallourec (Usines a Tubes de Lorraine-Escaut et Vallourec Reunies). Method for facing the ends of pipes. 3,834,273, Cl. 90-11.00c.

Pfannmueller, Helmut: *See—*
Stark, Jurt; Gropper, Hans; Urban, Friedrich; and Pfannmueller, Helmut, 3,835,107.

Pfarrwaller, Erwin, to Sulzer Brothers Ltd. Method and apparatus for braking filamentary material unwound from a package. 3,834,635, Cl. 242-47.010.

Pfister, Jurg R.; Harrison, Ian T.; and Fried, John H., to Syntex (U.S.A.) Inc., mesne. N-substituted acridone carboxylic acids and derivatives. 3,835,139, Cl. 260-279.00r.

Pfister, Jurg R.; Harrison, Ian T.; and Fried, John H., to Syntex (U.S.A.) Inc., mesne. Heterocyclic substituted xanthone carboxylic acid compounds. 3,835,157, Cl. 260-332.20a.

Pfister, Jurg R.; Harrison, Ian T.; and Fried, John H., to Syntex (U.S.A.) Inc., mesne. Heterocyclic substituted xanthone carboxylic acid compounds. 3,835,158, Cl. 260-332.20a.

Pfister, Jurg R., to Syntex (U.S.A.) Inc. Anthrone carboxylic acids and derivatives. 3,835,167, Cl. 260-351.000.

Pfizer Inc.: *See—*
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Tate, Bryce E.; and Berg, Rudolph G., 3,835,162.

Phelps, Albert C. Turnover bar. 3,834,749, Cl. 294-15.000.

Philco-Ford Corporation: *See—*
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Scarlett, John A., 3,834,177.

Philip Morris Corporation: *See—*
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Philips Petroleum Company: *See—*
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Phillips Petroleum Company: *See—*
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Ririe, Otis E., Jr., 3,834,875.

Photocircuits Corporation: *See—*
Burr, Robert Page; and Keogh, Raymond J., 3,834,014.

Piacente, Anthony N., to Congoleum Industries, Inc. Method for producing resinous sheetlike products. 3,835,212, Cl. 264-76.000.

Pianga, Adam: *See—*
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Piaskowski, Edward J.: *See—*
Blazewicz, Andrew J.; Piaskowski, Edward J.; and Wood, James F., 3,834,328.

Pichierri, Ronald F., to Sperry Rand Corporation. Xerographic copier with asynchronous copy feed. 3,834,805, Cl. 355-8.000.

Picker, Patrick, to Universite de Sherbrooke. Differential thermal detection and differential flow microcalorimetry. 3,834,873, Cl. 23-230.00r.

Pickford, Nigel Evans; and Daerds, Henry Charles, to British Visqueen Limited. Carrier-bags. 3,834,528, Cl. 206-526.000.

Pieters, Leon Andre, to Image Analysing Computers Limited. Information modification in image analysis systems employing line scanning. 3,835,245, Cl. 178-6.800.

Pike, JOhn E.: *See—*
Beal, Philip F., III; and Pike, JOhn E., 3,835,181.

Pike, John F.: *See—*
Lincoln, Frank H., Jr.; Pike, John F.; and Youngdale, Gilbert A., 3,835,180.

Piliero, James. Interlaced wire locking apparatus for coiled box spring construction. 3,833,949, Cl. 5-259.00b.

Pillsbury Company, The: *See—*
Gades, Larry D.; Brnadberg, Lawrence C.; and Gorman, Roger A., 3,835,280.

Pilot Research Corporation: *See—*
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Giraud, Benjamin, 3,834,192.

Pimiskern, Klaus: *See—*
Hepp, Wolfgang; Pimiskern, Klaus; and Herbert, Werner, 3,833,981.

Pink, John J., to Amana Refrigeration, Inc. Container for supplying chilled water from a refrigerator or the like. 3,834,178, Cl. 62-338.000.

Pinkard, Richard L. Framing template. 3,834,033, Cl. 33-174.00g.

Pinkerton, William E., to Huck Manufacturing Company. Method of setting a threaded fastener. 3,834,011, Cl. 29-517.000.

Pinko, Manuel: *See—*
Nickell, Claude H ., 3,834,837.

Pinot, Jean: *See—*
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Pioneer Electronic Corporation: *See—*
Itagaki, Tadashi, 3,835,265.

Pirovano, Camillo. Batch feeder with flexible and adjustable container walls. 3,834,591, Cl. 222-185.000.

Pityo, Albert F., to Reel Power Equipment, Inc. Boat anchor winch mechanism. 3,834,670, Cl. 254-150.00r.

Pivawer, Philip M., to Olin Corporation. Process for hydrolyzing pyrophosphates. 3,835,206, Cl. 260-983.000.

Plana, Roberto; and Villazon, Francisco, to AMP Incorporated. Slotted plate connector. 3,835,444, Cl. 339-98.000.

Plastrex-Manurhin S.A.R.L.: *See—*
Level, Bertrand P. E., 3,834,641.

Platt International Limited: *See—*
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Plessey Handel und Investments A.G.: *See—*
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Plumpe, David J.: *See—*
Milne, David T.; Plumpe, David J.; and Armstrong, David E., 3,835,419.

Pluta, Linda J.: *See—*
Olewinski, Edward W.; and Pluta, Linda J., 3,835,054.

Pocock, Walter E., to United States of America, Navy. Method of reducing solid arcing product build-up between electrical contacts in pressurized fluid ambients. 3,835,278, Cl. 200-249.000.

Poehlmann, George: *See—*
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Pogonowski, Ivo C., to Texaco Inc. Method of joining telescoped pipe sections. 3,834,012, Cl. 29-523.000.

Polley, Eugene: *See—*
Moritz, Scott N.; Polley, Eugene; and Puls, Werner H., 3,835,262.

Polymer Corporation Limited: *See—*
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Ponci, Riccardo: *See—*
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Poppenberger, Leopold H., to Lee, Raymond, Organization, Inc., The. Ski instruction apparatus. 3,834,693, Cl. 272-57.00b.

Portec, Inc.: *See—*
Pratt, Robert A.; Broling, Keith W.; and Tatina, Richard A., 3,834,321.

Portyrata, Raymond E., to Diaclear, Inc. Swimming pool filtering system. 3,834,535, Cl. 210-75.000.

Pottage, Paul Richmond: *See—*
Rundell, John Trethowan; and Pottage, Paul Richmond, 3,834,541.

Potter Instrument Company, Inc.: *See—*
Potter, John T., 3,834,304.

Potter, John T., to Potter Instrument Company, Inc. Helical bar printer and hammer therefor. 3,834,304, Cl. 101-930.000.

Potts, Richard McCrea: *See—*
Gander, Robert Johns; and Potts, Richard McCrea, 3,835,090.

Pouzou, Albert M., to Reynolds Metals Company. Ball bat. 3,834,698, Cl. 273-72.00a.

Powell, John M.: *See—*
McAusland, Robert R.; and Powell, John M., 3,834,044.

Powers, Joseph E., to Kaiser Steel Corporation. Nailable steel floor planking for freight vehicles. 3,834,105, Cl. 52-377.000.

PPG Industries, Inc.: *See—*
Dunsmoor, Lyle H., 3,835,217.
Frank, Robert G., 3,834,885.
Hammel, Joseph J., 3,834,911.
Hummell, John D., 3,834,055.
Hummell, John D., 3,834,855.

Prater, John D.: *See*—
Queneau, Paul B.; and Prater, John D., 3,834,893.
Pratt, Robert A.; Broling, Keith W.; and Tatina, Richard A., to Portec, Inc. Cushioned rack for containers on flatcars. 3,834,321, Cl. 105-366.00a.
Pravednaya, Ljudmila Dmitrievna: *See*—
Kaljuko, Alexei Yakovlevich; Simkhovich, Fridrikh Levikovich; Cherednik, Nina Fedorovna; Pravednaya, Ljudmila Dmitrievna; Kasakov, Alexei Mikhailovich; Saposhkov, Alexandr Mikhailovich; and Lischinsky, Anri Iosifovich, 3,835,250.
Prendergast, John M., Jr.: *See*—
Fendley, Richard L.; Hoenig, Gerhard E.; Poehlmann, George; and Prendergast, John M., Jr., 3,834,604.
Prenn, Otto E., to Steel Company of Canada, Limited, The. Electrode seals for electric-arc furnaces. 3,835,233, Cl. 13-17.000.
Prentice, Winslow W.; and Malootian, Markay H., to United States of America, Navy. Method of making fusible and electircal conductive coating. 3,834,960, Cl. 156-53.000.
Prescher, Kenneth E.; Schauer, Ronald E.; and Sikorski, Frank B., to GTE Automatic Electric Laboratories, Incorporated. Communication switching system, with marker, register, and other subsystems coordinated by a stored program central processor. 3,835,260 Cl. 179-18.0es.
Preston, Jerome A., to Essex International Inc. Theic-hydantoin-ester resins for wire coatings. 3,835,121, Cl. 260-77.5nc.
Preuss, Bernhard, to Siemens Adtiengesellschaft. Electric power circuit breaker equipped with a latching mechanism wherein restoring forces are provided as a function of switching shaft position. 3,835,275, Cl. 200-153.0sc.
Pridgen, Robert H. Leg muscle exercise apparatus. 3,834,694, Cl. 272-58.000.
Priebs, Horst, to Anker-Werke AG. Recorder head for code characters in line printing. 3,834,506, Cl. 197-1.00r.
Procter & Gamble Company, The: *See*—
Dulle, Bernard Allen, 3,834,389.
Maag, Gustav A.; and Callaham, John E., 3,834,205.
White, Ronald E., 3,835,058.
Procter Chemical Company, Inc.: *See*—
Thompson, Jimmy M., 3,834,871.
Produits Chimiques Ugine Kuhlmann: *See*—
Colin, Pierre, 3,835,047.
Professor, Inc., The: *See*—
Lamb, Kenneth E., 3,834,709.
Promo-Pat Inc.: *See*—
Hinden, Alan W., 3,834,746.
Proudian, Andrew P., to Xonics, Inc. Method and apparatus for achieving gain in electron radiography imaging chamber. 3,835,321, Cl. 250-315.000.
Pullman Incorporated: *See*—
Carr, George W., 3,834,575.
Puls, Werner H.: *See*—
Moritz, Scott N.; Polley, Eugene; and Puls, Werner H., 3,835,262.
Pum, Franz, to Alberto-Culver Company. Oxidation dye compositions containing 5-aminoguaiacols as couplers. 3,834,866, Cl. 8-11.000.
Purex Corporation, Ltd.: *See*—
Brett, James E., 3,834,537.
Puritan-Bennett Corporation: *See*—
Peterson, Kenneth M., 3,834,381.
Weigl, James; and Davis, James E. P., 3,834,383.
Putney, Gordon A., to Koerper Engineering Associates, Inc. Fluidized bed coating method. 3,834,927, Cl. 117-21.000.
Putzig, Donald Edward, to Du Pont de Nemours, E. I., and Company. Blue disperse 1,4-diaminoanthraquinone-2,3-dicarboximide dyes. 3,835,154, Cl. 260-326.00c.
Pyrotenax Limited: *See*—
Sissons, Anthony Chamberlen; and Cairns, Malcolm, Anthony, 3,834,002.
Quaker Oats Company, The: *See*—
Armitt, John; Guerrero, Paul; and Peterson, Robert J., 3,834,119.
Queener, Carl Allan: *See*—
Fuller, Sterritt Ray; Munzel, Howard Everett; and Queener, Carl Allan, 3,834,807.
Queneau, Paul B.; and Prater, John D., to Kennecott Copper Corporation. Combined chemical treatment and flotation process for recovering relatively high grade molybdenite from off grade ore low grade ore materials. 3,834,893, Cl. 75-2.000.
Quigley, Richard E., Jr.; and McFadden, Buryl L., Jr., to United States of America, Air Force. Dual mode auxiliary power unit. 3,834,161, Cl. 60-244.000.
Quindar Electronics, Inc.: *See*—
Epstein, Philip L., 3,835,413.
Quinn, Brian P., to United States of America, Air Force. Compact high thrust augmentation ejector system. 3,834,834, Cl. 417-179.000.
Raag, Frants Ivanovich: *See*—
Nessler, Andrei Maximilianovich; Raag, Frants Ivanovich; Savelieva, Maria Pavolovna; Vikhrova, Agrippina Gavrilovna; and Dmitriev, Leonid Sergeevich, 3,834,146.
Rabago, Tony, Jr.: *See*—
Schwartz, Andrew K., Jr.; and Rabago, Tony, Jr., 3,835,199.
Rabbitt, Robert R.: *See*—
Holtkamp, Donald A.; Chichester, Willard L.; and Rabbitt, Robert R., 3,834,569.
Rabelos, Nicholas A., to Rescue Industries, Inc. Fire escape device with belt tightening slide. 3,834,489, Cl. 182-5.000.
Rack, David. Shape-retaining substrate for a plant and method of making the same. 3,834,072, Cl. 47-37.000.
Rademacher, Friedrich, to Holstein & Kappert Maschinenfabrik Phonix GmbH. Movably displaceable return gas pipe in a counter pressure filling machine. 3,834,428, Cl. 141-39.000.
Radex Corporation: *See*—
Stiebel, Ariel, 3,834,029.
Radke, Rodney O.: *See*—
Husted, Robert F.; and Radke, Rodney O., 3,834,891.
Raimbault, Pierre Lucien, to L.C.C.-C.I.C.E. Compagnie Europeenne de Composants. Liquid crystal display devices and methods of manufacturing such devices. 3,834,791, Cl. 350-160.01c.
Rainer, Ewald Joseph. Variable length ski. 3,834,722, Cl. 280-11.13k.
Raines, Herman R. Surgical mask with adhesive vapor barrier. 3,834,384, Cl. 128-146.200.
Rainsford Metal Products Proprietary Limited: *See*—
Heath, Robert Boyson, 3,834,646.
Raisin, Jean-Pierre; and Bernardot, Andre, to Centre Technique Industriel dite: Institut Textile de France. Machine for automatic assembly of knitted articles. 3,834,331, Cl. 112-27.000.
Rakich, Antone F.: *See*—
Laigle, Roger E.; Rakich, Antone F.; and Sivakoff, William J., 3,834,207.
Randall, John W., to USM Corporation. Shoe last and method for insole attachment means. 3,833,958, Cl. 12-142.00r.
Rapacoulia, Panayota: *See*—
Sekiguchi, Hikaru; Rapacoulia, Panayota; and Coutin, Bernard, 3,835,100.
Raphael's Limited: *See*—
Barnett, Cecil, 3,834,089.
Rapko, John N., to Monsanto Company. Tetiahydrofuran polycarboxylic acids. 3,835,163, Cl. 260-347.300.
Raschke, Heinz, to Vereinigte Osterreichische- Eisen- und Stahlwerke-Alpine Montan Aktiengesellschaft. Continuous casting mold having a breakout sensing and control device. 3,834,445, Cl. 164-150.000.
Raspanti, Giuseppe: *See*—
Matter, Max; Raspanti, Giuseppe; and Ulshoefer, Hermann, 3,834,867.
Rathburn, Paul, to Craft Camera Corporation. Graphic arts camera. 3,834,811, Cl. 355-18.000.
Ratz, Walter; and Laval, Willy, to Bergwerksverbank GmbH. Conductor loops for ascertaining damage in steel cable reinforced conveyor belts. 3,834,524, Cl. 198-232.000.
Rau, Jim L.: *See*—
Goff, Raymon L.; and Rau, Jim L., 3,834,278.
Rauch, Richard A.; Camas, George; and Shulman, Elliott, to CPE Industries, Inc. Air drive for conveyor. 3,834,521, Cl. 198-203.000.
Ray, Lindsey W.: *See*—
Ray, Lindsey W.; Bryant, William S.; and Ray, William A., 3,834,761.
Ray, Lindsey W.; Bryant, William S.; and Ray, William A., to Ray, Lindsey W. and Ray, William A. mesne. Deep-mine augering machine. 3,834,761, Cl. 299-10.000.
Ray, William A.: *See*—
Ray, Lindsey W.; Bryant, William S.; and Ray, William A., 3,834,761.
Ray, William A. mesne: *See*—
Ray, Lindsey W.; Bryant, William S.; and Ray, William A., 3,834,761.
Raymond Corporation, The: *See*—
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Raytheon Company: *See*—
Seidel, Harry W., 3,834,295.
RCA Corporation: *See*—
Block, Dennis Howard, 3,835,336.
Bond, Donald Spencer, 3,835,253.
De Brecht, Robert Eugene; and Napoli, Louis Sebastian, 3,835,421.
Dodd, John Alton, Jr.; and Okamoto, Raymond Fujio, 3,834,905.
Harford, Jack Rudolph, 3,835,248.
Perkel, Harold, 3,834,653.
Wittlinger, Harold Allen, 3,835,410.
Read, Peter John: *See*—
Baker, William Albert; Wheatley, John Arthur; Read, Peter John; Latimer, Keith Graham; and Reynolds, Terence David Warren, 3,833,983.
Reck, Lothar, to General Motors Corporation. Motor vehicle indicator systems. 3,835,450, Cl. 340-52.00f.
Reed, Geoffrey Ronald, to British Steel Corporation. Coil stabilising system. 3,834,637, Cl. 242-65.000.
Reefman, William Edward: *See*—
Budych, Irvin; Frey, La Verne Lawrence; and Reefman, William Edward, 3,833,999.
Reel Power Equipment, Inc.: *See*—
Pityo, Albert F., 3,834,670.
Reens, Louis H.: *See*—
Buckwalter, Leonard, 3,834,618.
Reese, Harvey, to Reese-Stein & Co., Inc. Inflatable ornamental device. 3,835,308, Cl. 240-10.00c.
Reese, Roger H.: *See*—
Larson, Clarence E.; Dawley, Richard H.; and Reese, Roger H., 3,834,568.
Reese-Stein & Co., Inc.: *See*—
Reese, Harvey, 3,835,308.

Reeser, Eugene F., to Phillips Petroleum Company. Apparatus for rotating articles on a moving conveyor. 3,834,516, Cl. 198-283.000.

Reflectomorphics, Inc.: *See*—
Barnes, Clarence A., Jr.; and Chadsey, Carl T., Jr., 3,834,051.

Regie Nationale des Usines Renault: *See*—
Bourdolle, Henri M.; Lacroix, Serge R.; Fleury, Jean E.; Peuillot, Gilbert; and Pinot, Jean, 3,835,016.

Reichardt, Volker: *See*—
Kamp, Heinz; Wilms, Willi; and Reichardt, Volker, 3,834,189.

Reid, Jay H., to Sears, Roebuck and Co. Knockdown jack assembly. 3,834,669, Cl. 254-133.000.

Reimers, James L., to FMC Corporation. High speed container orienting mechanism. 3,834,517, Cl. 198-266.000.

Reinfeld, Kurt, to Koppers Company, Inc. Sinter pallet. 3,834,684, Cl. 266-21.000.

Reliance Trailer Manufacturing, Inc.: *See*—
Acker, Douglas B.; and Berrry, Trevis L., 3,834,111.

Remley, Kenneth H., to American Cyanamid Company. Textile adhesive from polyurethane. 3,835,081, Cl. 260-29.2tn.

Renfroe, Harrris Burt, to Ciba-Geigy Corporation. 3-Aroyl-alkenyleneimines. 3,835,149, Cl. 260-297.00r.

Renjilian, Armen, to Albany International Corporation. Fibrous product. 3,834,547, Cl. 210-497.100.

Renouf, William, to Stephens, N. S., Company, Inc. Dinghy lifting device. 3,834,338, Cl. 114-43.500.

Rescue Industries, Inc.: *See*—
Rabelos, Nicholas A., 3,834,489.

Research Corporation: *See*—
Carpino, Louis A.; and Han, Grace Y., 3,835,175.

Research Corporation, mesne: *See*—
Olofson, Ray A.; and Yamamoto, Yasushi Stephan, 3,835,109.

Restanino, Alfred J., to ICI America Inc. Dewatering of aqueous suspensions. 3,835,046, Cl. 210-54.000.

Reuschel, Konrad: *See*—
Dietze, Wolfgang; Emeis, Reimer; Keller, Wolfgang; Muehlbauer, Alfred; and Reuschel, Konrad, 3,834,349.

Revcon, Incorporated: *See*—
Thousand, John L., 3,834,766.

Rexnord, Inc.: *See*—
Evans, Robley W., 3,834,523.

Reynolds, Clifton J.: *See*—
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Reynolds Metals Company: *See*—
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Reynolds, Terence David Warren: *See*—
Baker, William Albert; Wheatley, John Arthur; Read, Peter John; Latimer, Keith Graham; and Reynolds, Terence David Warren, 3,833,983.

RFL Industries, Inc.: *See*—
Gilbert, Roswell W., 3,835,418.

Rhee, Dong Woo, to GTE Sylvania Incorporated. Television receiver deflection circuitry. 3,835,348, Cl. 315-27.0td.

Rhee, Seong Kwan; and Kwolek, John P., to Bendix Corporation, The. Sponge iron friction material. 3,835,118, Cl. 260-38.000.

Rhone-Poulenc S.A.: *See*—
Brun, Robert; and Pages, Michel, 3,834,546.
Menet, Albert, 3,835,195.

Rhone-Poulenc-Textile: *See*—
Benchemoul, Claude, 3,834,600.

Rhone-Progil: *See*—
Ferat, Alain; Masotti, Robert; and Chavenel, Hubert, 3,835,007.

Rice, Verner K.: *See*—
Wilber, John A.; Rice, Verner K.; and Buhrke, Rolfe E., 3,835,312.

Richardson, Kenneth, to Pfizer Inc. Alpha-(substituted sulfonamide)arylmethylpenicillin. 3,835,115, Cl. 260-239.100.

Richens, Robert H.; and Garner, Charles A., to Cole National Corporation. Key vise structure. 3,834,688, Cl. 269-42.000.

Richmond Marine Limited: *See*—
Thorpe, David C., 3,834,340.

Richter, Albert P., Jr., to Texaco Inc. Highly efficient long life gas trap. 3,834,125, Cl. 55-208.000.

Rider, Ronald E., to Xerox Corporation. Position indicator for a display system. 3,835,464, Cl. 340-324.00a.

Rife, William J.: *See*—
Dunn, R. S.; and Rife, William J., 3,834,104.

Riggers Manufacturing Company: *See*—
Trask, Walter H.; and Dixon, Jack, 3,834,182.

Riley, George A.: *See*—
Gartland, Albert J., Jr.; Carissimi, Vincent L.; and Riley, George A., 3,835,437.

Rindfleisch, Volker: *See*—
Muller, Karl-Heinz; Rindfleisch, Volker; Von Rauch, Moriz; Willasch, Dieter; and Dollmeier, Georg, 3,835,246.

Riordan, Hugh E.: *See*—
Hager, James R.; and Riordan, Hugh E., 3,834,345.

Ririe, Otis E., Jr., to Phillips Petroleum Company. Hydrogen fluoride vapor detection system. 3,834,875, Cl. 23-232.00c.

Ritcey, Gordon Malcolm; and Lucas, Bernard Henry, to Canadian Patents and Development Limited. Co-extraction and separate recovery of uranium and thorium from acid solutions. 3,835,213, Cl. 423-9.000.

Ritter, Kaspar, to Kopat Gesellschaft fur Konstruktion Entwicklung und Patentverwertung m.b.H., & Co., K.G. Hydrostatic torque converter. 3,834,164, Cl. 60-492.000.

Rittler, Herman L.: *See*—
Grossman, David G.; and Rittler, Herman L., 3,834,981.

Rizzo, Victor L.: *See*—
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Robert, Louis F.: *See*—
Johnson, Robert B.; and Robert, Louis F., 3,834,115.

Robertshaw Controls Company: *See*—
Genbauffe, Francis S., 3,834,661.

Robertson, Donald, to Leeds & Northrup Company. Thermocouple for surface temperature measurements. 3,834,237, Cl. 73-359.000.

Robertson, Harry M. Extrusion die. 3,834,209, Cl. 72-269.000.

Robins, A. H., Company Incorporated: *See*—
Lerner, Irwin S.; Davis, Hugh J.; and Earl, Thad J., 3,834,378.

Robinschon, John. Liquid level responsive control system. 3,835,335, Cl. 307-116.000.

Robinson, John E.; and Kenney, James W., to Drummond Scientific Company. Microliter fluid delivery apparatus. 3,834,590, Cl. 222-148.000.

Robinson, Robert Harold. Cartridge string guitar assembly. 3,834,266, Cl. 84-267.000.

Rockwell International Corporation: *See*—
Macken, John A., 3,834,790.
Tannas, Lawrence E., Jr.; and Hobbs, John V., 3,835,465.

Roehrig, Jonathan R.; and Torney, Franklin L., to National Research Corporation. Cold cathode ion source mass spectrometer with straight line arrangement of ion source and analyzer. 3,835,319, Cl. 250-290.000.

Rogers, Alan B.: *See*—
Schwall, Donald V.; Rogers, Alan B.; and Corbin, Dennisis, 3,835,223.

Rogers, Howard D.; and Schaeflern, Henry, to Singer Company, The. Knit contour unit for a knitting machine. 3,834,186, Cl. 66-1.00r.

Rohm & Haas Company: *See*—
Hurwitz, Melvin D., 3,833,951.
Kilbourn, Edward E., 3,835,147.
Lewis, Sheldon N.; and Miller, George Allen, 3,835,150.

Rohm and Haas Company: *See*—
Rossell, Gary L.; Fleischer, Paul C., Jr.; and Seifer, Maurice I., 3,834,979.
Zdanowski, Richard E., 3,835,078.

Roland Offsetmaschinenfabrik Faber & Schleicher AG: *See*—
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Rollei-Werke Franke & Heidecke: *See*—
Schneider, Arthur, 3,835,351.

Rolls-Royce (1971) Limited: *See*—
Mallinder, Frederick Paul; and Hannah, Clifford George, 3,834,832.

Ronchese, Aldo. Water heater. 3,835,295, Cl. 219-314.000.

Ronk, Hugo V., to American La France Inc. Portable fire escape ladder. 3,834,492, Cl. 182-196.000.

Rooks, Earnest F.; and Lewis, David E., to Columbia Pictures Industries, Inc. Control circuitry for information transmission system. 3,835,387, Cl. 325-55.000.

Roos, Gunther; Kaussen, Robert; and Van Spankeren, Ulrich, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Flame resistant reinforced polyolefin mixture. 3,835,091, Cl. 260-42.450.

Root, Charles B., to Allied Chemical Corporation. Catalytic decomposition of ammonium bisulfate to form ammonium, bisulfite and sulfur dioxide. 3,835,218, Cl. 423-519.000.

Roper, Ralph E., to Wallace Expanding Machines, Inc. Apparatus for forming metal wheels. 3,834,212, Cl. 72-354.000.

Rosch, Gunter: *See*—
Mengler, Helmut; Rosch, Gunter; Schinzel, Erich; and Smerz, Otto, 3,835,126.

Rose, Henry J. Oil based coating composition. 3,834,920, Cl. 106-267.000.

Rose, Marshall G., Jr.; and Clark, Harold V., to Ampex Corporation. Apparatus and method for sensing diameter of tape pack on storage reel. 3,834,648, Cl. 242-186.000.

Rosen, Philip; Feenen, John; and Howton, Kenneth Douglas, to English Electric Company Limited, The. Electrical fuse. 3,835,431, Cl. 337-161.000.

Rosenberg, Bruce L., to United States of America, Navy. Nonlinear energy absorption system. 3,833,952, Cl. 5-353.000.

Rossell, Gary L.; Fleischer, Paul C., Jr.; and Seifer, Maurice I., to Rohm and Haas Company. Laminar reinforcement element and method for reinforcing textile garments. 3,834,979, Cl. 161-146.000.

Rostagno, Walter, to Societe d'Assistance Technique pour Produits Nestle S.A. Production of edible granules. 3,835,226, Cl. 426-213.000.

Roth, Johann; and Grimm, Werner, to Braun Aktiengesellschaft. Movie camera with synchron pulse generator for a sound recorder. 3,834,797, Cl. 352-12.000.

Rothwell, Ronald Edward; Cipriani, Cipriano; and Rush, Julian Lee, to Allied Chemical Corporation. Shock-proof nylon carpet system. 3,834,977, Cl. 161-67.000.

Rotopak Systems Inc.: *See*—
Molitorisz, Joseph Bellevue, 3,834,300.

Rounds, Hugh G.: *See*—
Schoenrock, Karlheinz W. R.; Hsieh, Chia-Lung; and Rounds, Hugh G., 3,834,941.

Rouyer, Georges Aimable Theophile; and Fremont, Maurice Henri Louis, to Societe National Industriele Aerospatiale. Method and machine for corrugating or pleating sheet metal. 3,834,199, Cl. 72-38.000.

Rovner, Leopold. Apparatus for determining the direction of a magnetic field relative to a reference direction by sychronously scanning the field and a memory. 3,835,375, Cl. 324-43.00r.

Rowe, James H.; and Markus, Joseph, to Nabisco, Inc. Method for forming toaster packages having pour spouts. 3,834,113, Cl. 53-14.000.

Rowlands, Richard, to United States of America, Navy, mesne. Chirp signal apparatus. 3,835,446, Cl. 340-3.00r.

Royal Medical Corporation: *See*—
Mueller, Fritz Kurt; Martin, Billy Otis; Martin, Robert Cherry; Stricklin, Bobby Joe; and Weeks, Raymond Leland, 3,834,238.

Rubin, Sam: *See*—
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Ruh, Gerhard, to Olympia Werke AG. Multiple pitch margin stop device. 3,834,508, Cl. 197-63.000.

Ruh, Gerhard, to Olympia Werke AG. Function controlling margin stop arrangement. 3,834,509, Cl. 197-63.000.

Ruhoff, David: *See*—
Demos, Gary A.; and Ruhoff, David, 3,835,396.

Rundell, John Trethowan; and Pottage, Paul Richmond, to Tate & Lyle Limited. Apparatus for the separation of suspended solids from liquids. 3,834,541, Cl. 210-219.000.

Rush, Julian Lee: *See*—
Rothwell, Ronald Edward; Cipriani, Cipriano; and Rush, Julian Lee, 3,834,977.

Russell, Harold, D.; and Lin, James G., to LogEtronics Inc. Dryer for photographic film. 3,834,040, Cl. 34-160.000.

Russer, Peter, to Licentia Patent-Verwaltungs-G.m.b.H. Clock pulse regenerator. 3,835,398, Cl. 328-164.000.

Rutherford, Robert, to Swan Hunter Group Limited. Construction of ships. 3,834,339, Cl. 114-77.00r.

Rutledge, James E., research Corporation. Chemcial modification of rice. 3,835,225, Cl. 426-208.000.

Rutledge, Seth E. Valve stem and valve stem tool. 3,833,995, Cl. 29-221.500.

Rutz, Elizabeth Maria; and Kagan, Morton Richard, to International Business Machines Corporation. High radiance semiconductor laser. 3,835,415, Cl. 331-94.50s.

Sabherwal, Inderjit: *See*—
Briskin, Theodore S.; Schnautz, Norman G.; and Sabherwal, Inderjit, 3,834,398.

Sachs, Gunter, to Eastman Kodak Company. Film drive for cinematographic apparatus. 3,834,652, Cl. 242-205.000.

Sacht, Hans Otto: *See*—
Bracht, Karl Friedrich; Strube, Herbert A.; and Sacht, Hans Otto, 3,834,141.

Safe Flight Instrument Corporation: *See*—
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Safer Co., Ltd.: *See*—
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Safronova, Ljudmila Andreevna: *See*—
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Sakane, Kazuhiro; and Iida, Wataru, to Toyoda Koki Kabushiki Kaisha. Servo copying machining apparatus. 3,834,084, Cl. 51-101.00r.

Sakurai, Waichi; Igarashi, Takeshi; and Yuasa, Osamu, to Daiwa Boseki Kabushiki Kaisha and Kabushiki Kaisha Toyoda Jodoshokki Seisakusho. Ringless spinning apparatus. 3,834,148, Cl. 57-58.950.

Samuels, Ed: *See*—
Hunter, Roland L., 3,834,656.

Samuelsen, Eirik, to Dyno Industrier A.S. Process for the production fo a water-bearing explosive composition. 3,834,954, Cl. 149-2.000.

Sanctuary, Clifford; Woods, Donald C.; and Bachman, John A., to Del Mar Engineering Laboratories. . 3,834,375, Cl. Respiratory gas analyzer for .

Sandhack, Lothar: *See*—
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Sandow, Louis W., to Outboard Marine Corporation. Snowmobile chain tensioning device. 3,834,477, Cl. 180-9.640.

Sandoz Ltd.: *See*—
Matter, Max; Raspanti, Giuseppe; and Ulshoefer, Hermann, 3,834,867.
Seckinger, karl, 3,835,133.

Sanger, Jacobus Simon. Handling apparatus for lifting and displacing articles of relatively great weight. 3,834,667, Cl. 254-2.00r.

Sangster, Arlon G. Anti-theft device for internal combustion engines. 3,834,484, Cl. 180-114.000.

Sano, Hiroshi: *See*—
Takamiya, Youichi; Sasaguri, Kiichiro; Sano, Hiroshi; Okina, Katsumi; and Kawachi, Sunao, 3,835,088.

Santi, Joseph A.: *See*—
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Santos, Manuel V. Knot tying instruments. 3,834,395, Cl. 128-326.000.

Saposhkov, Alexandr Mikhailovich: *See*—
Kaljuko, Alexei Yakovlevich; Simkhovich, Fridrikh Levikovich; Cherednik, Nina Fedorovna; Pravednaya, Ljudmila Dmitrievna; Kasakov, Alexei Mikhailovich; Saposhkov, Alexandr Mikhailovich; and Lischinsky, Anri Iosifovich, 3,835,250.

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Sass, Jochen; and Esche, Rolf, to Ottensener Eisenwerk GmbH. Induction heating apparatus for heating the marginal edge of a disk. 3,835,282, Cl. 219-10.570.

Sathicq, Robert: *See*—
Morane, Bruno P.; Paoletti, Charles; Maurelli, Manlio; Merrien, Louis; and Sathicq, Robert, 3,834,589.

Sato, Kazuo, to Toyota Jidosha Kogyo Kabushiki Kaisha. Detonator. 3,834,313, Cl. 102-70.20a.

Sato, Takuya R. Silver, silver chloride electrodes. 3,834,373, Cl. 128-206.00e.

Satoo, Isamu: *See*—
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Sattler, James L., to Wildwood Products, Inc. Awning construction. 3,834,400, Cl. 131-5.0at.

Sauer, J. P., & Sohn GmbH: *See*—
Bielfeldt, Heinz, deceased, 3,834,053.

Sauer, Philip H., to Cenco Medical/Health Supply Corporation. Suction control arrangement for a suction catheter. 3,834,388, Cl. 128-276.000.

Sauveur, Omer G.; and Adams, Rudolph J., to Peterson, Carl G., Co. Coil stock cradle. 3,834,643, Cl. 242-78.700.

Sava, Robert, to Owens, Thaddeus E., mesne. Means for securing a magnetic tape to motion picture film. 3,834,972, Cl. 156-517.000.

Savage, James G.; and Hawkins, Arnold L., to Singer Company, The. Assembly for spooling an audit trail in a data terminal. 3,834,638, Cl. 242-67.10r.

Savelieva, Maria Pavolovna: *See*—
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Sawhill, Duane L., to Olin Corporation. Polychloroisocyanuric acids prepared from a monoalkali metal cyanurate. 3,835,135, Cl. 260-248.00c.

Scala, Luciano C.: *See*—
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Scardiglia, Frank; and Hokama, Takeo, to Velsicol Chemical Corporation. Hot melt compositions comprising styrene-isobutylene copolymer, wax, and a primary resin. 3,835,079, Cl. 260-28.50a.

Scarlett, John A., to Philco-Ford Corporation. Refrigerator cabinet structure and its manufacture. 3,834,177, Cl. 62-288.000.

Scarritt, Francis M., Sr. Lane stripe steering guide. 3,834,036, Cl. 33-264.000.

Schabach, Werner: *See*—
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Schaffer, Donald W., to International Business Machines Corporation. Article handling apparatus. 3,834,559, Cl. 214-1.0bt.
Schaller, Rudolf: *See*—
Kaiserswerth, Hans-Peter; Wimmer, Josef; and Schaller, Rudolf, 3,835,370.
Schaub, Robert Eugene; and Weiss, Martin Joseph, to American Cyanamid Company. Novel 15-substituted prostanoic acids. 3,835,179, Cl. 260-468.00d.
Schauer, Ronald E.: *See*—
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Schering Aktiengesellschaft: *See*—
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Schiemann, Wofram. Device for the venting of Jerry cans. 3,834,594, Cl. 222-464.000.
Schiessl, Henry W.: *See*—
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Schiessl, Henry W.; Sawhill, Duane L.; and Bhutani, Sudhir K., to Olin Corporation. Polychloroisocyanuric acids prepared from a monoalkali metal cyanurate. 3,835,134, Cl. 260-248.00c.
Schildkraut, Sid, to Edo Corporation. Trandducer corona shield. 3,835,340, Cl. 310-9.800.
Schiller, Werner; Obladen, Peter; and Peters, Leonhard, to Eumuco Aktiengesellschaft fur Maschinebau. Forging press. 3,834,216, Cl. 72-441.000.
Schinzel, Erich: *See*—
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Schlesinger, Sheldon I., to American Can Company. Photopolymerization of oxetanes. 3,835,003, Cl. 204-159.110.
Schlitz, Joseph, Brewing Company: *See*—
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Schmidt, Herbert K., to Wean United, Inc. Die changing apparatus. 3,834,208, Cl. 72-263.000.
Schmidt, Walter E., to Petcoa Industries, Inc., mesne. Non-corrosive, insulated illumination device for an aquarium. 3,834,351, Cl. 119-5.000.
Schnaibel, Eberhard: *See*—
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Schneider, Arthur, to Rollei-Werke Franke & Heidecke. Photographic flash apparatus. 3,835,351, Cl. 315-241.00p.
Schneider, Bernd, to Ventron Corporation. Method for intercalating chromium trioxide (CRO_3) in graphite. 3,835,067, Cl. 252-447.000.
Schoell, Harry L. Water jet propulsion device. 3,834,342, Cl. 115-12.00r.
Schoenrock, Karlheinz W. R.; Hsieh, Chia-Lung; and Rounds, Hugh G., to Amalgamated Sugar Company, The. Process for the purification of sugarbeet juice and the recuction of lime salts therein. 3,834,941, Cl. 127-50.000.
Scholfield, Richard P., to Wheeldex Manufacturing Company, Inc. Pivot file wih multiple rows of file cards. 3,834,050, Cl. 40-67.000.
Scholz, Manfred: *See*—
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Schons, Pete A. Tire spray collector apparatus. 3,834,732, Cl. 280-154.50r.
Schreckendgust, Jay G., to Staley, A.E., Manufacturing Company. Reflective elements. 3,834,801, Cl. 353-120.000.
Schroer, Walter; Eimer, Johannes; and Mertens, Gunter, to Bayer Aktiengesellschaft. Dresssing leather. 3,834,936, Cl. 117-142.000.
Schubert, Bernhard; and Blidung, Otto, to Hauni-Werke Korber & Co. K.G. Method and machine for the production of composite filter mouthpiece. 3,834,285, Cl. 93-1.00c.
Schubring, Norman W., to General Motors Corporation. Automatic proximity braking system for motor vehicles. 3,835,361, Cl. 318-561.000.
Schuler, Max: *See*—
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Schuler, Ulrich, to Siemens Aktiengesellschaft. Inductive control pulse generating apparatus for an electric machine. 3,835,358, Cl. 318-327.000.
Schuller, Walter H., to United States of America, Agriculture. Dehydroabietic acid and ethylene reaction products. 3,835,182, Cl. 260-468.500.
Schulz, Arthur F., to Schlitz, Joseph, Brewing Company. Method and apparatus for detecting beverage bottles having a lip damaged outwardly of the crown sealing surface. 3,834,429, Cl. 141-83.000.
Schulz, Wallace W., to United States of America, Atomic Energy Commission. Process for separating neptunium from thorium. 3,835,044, Cl. 210-37.000.
Schumacher, Gunter: *See*—
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Schumacher, Gustav, II; and Schumacher, Gunter. Device for supporting the cutting mechanism on a harvesting machine. 3,834,139, Cl. 56-313.000.
Schumm, Guenther: *See*—
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Schunemann, Horst. Tool for taking impressions of toothless jaws. 3,834,025, Cl. 32-17.000.
Schwall, Donald V.; Rogers, Alan B.; and Corbin, Dennisis, to Armour and Company. Self-basting poultry product and method of preparation. 3,835,223, Cl. 426-92.000.
Schwartz, Andrew K., Jr.; and Rabago, Tony, Jr., to Petro-Tex Chemical Corporation. Dehydrogenation process and catalyst. 3,835,199, Cl. 260-683.300.
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Schwarzkopf, August, to Windmoller & Holscher. Handle-type carrying bag made of plastics material sheeting. 3,834,611, Cl. 229-54.00r.
Sciaky, David, to Welding Research, Inc. Electron beam welding meachine with split seal means. 3,835,291, Cl. 219-121.0eb.
Science Union Et Cie Societe Francaise De Recherche Medicale: *See*—
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Seavey, Robert W. Feed and trim apparatus. 3,833,979, Cl. 29-27.00c.
Sebesta, Edward C.: *See*—
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Sedlarik, Jaroslav: *See*—
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Sedley, Bruce S., to Greer Hydraulics, Inc. High security, card operable magnetic lock. 3,834,197, Cl. 70-38.00c.
Seel, Jerry Eslie. Heating element support. 3,835,435, Cl. 338-280.000.
Seidel, Harry W., to Raytheon Company. Oven hood with automatic switch. 3,834,295, Cl. 98-115.00k.
Seifer, Maurice I.: *See*—
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Seiwert, David L.; and Hampton, Thomas L., to General Electric Company. Method of making a lightweight duct. 3,834,965, Cl. 156-294.000.
Sekiguchi, Hikaru; Rapacoulia, Panayota; and Coutin, Bernard, to Agence Nationale de Valorisation de la Recherche (Anvar). Method for anionic polymerization of alpha-pyrrolidone or alpha-piperidone with quaternary ammonium salts. 3,835,100, Cl. 260-78.00p.
Sekiguti, Juniti: *See*—
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Seregely, Daniel E.; and Kidda, Bernard G., to Gillette Company, The. Marking boards and erasable ink compositions therefor. 3,834,823, Cl. 401-198.000.

Servis Equipment Company: *See—*
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Sessions, Robert W.: *See—*
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Sevik, Maurice M.; and Smith, Fred E., to United States of America, Navy. Bellmouth vehicle exhaust port. 3,834,626, Cl. 239-265.130.

Sexton, Peter R. L.; and Tibbetts, Samuel H, III, to Maine Technical Industries Incorporated. Fluid-cooled engine exhaust system. 3,834,341, Cl. 115-.50r.

Seyama, Tsuneo, to Aidearu Kiki Co., Ltd. Electromotive hand sewer. 3,834,333, Cl. 112-169.000.

Seybold, Frederick W. Flywheel converting oscillating into uniformly rotating motion. 3,834,242, Cl. 74-25.000.

Shaffer, William John, to Leeds & Northrup Company. DC signal translator with a variable amplitude oscillator. 3,835,408, Cl. 330-10.000.

Shapero, Wallace H.: *See—*
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Shin Nihon Kagaku Kogyo Kabushiki Kaisha: *See—*
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Shindo, Minoru; Kakimoto, Morio; Nagano, Hiroyuki; and Fujimura, Yasuo, to Chugai Seiyaku Kabushiki Kaisha. Benzotriazocine derivatives. 3,835,125, Cl. 260-239.380.

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Shinomiya, Takeshi; Tarui, Yoshio; and Enomoto, Shuhji. Process for manufacturing an activated carbon. 3,835,064, Cl. 252-423.000.

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Kakhovsky, Nikolai Ivanovich; Vakulenko, Anatoly Nikolaevich; Zakharov, Leonod Stepanovich; Lipodaev, Vladimir Nikolaevich; Fartushny, Vladimir Grigorievich; Kakhovsky, Jury Nikolaevich; Boiko, Vily Arsentievich; Sidlin, Zinovy Abramovich; and Juschenko, Knstantin Andreevich, 3,835,289.

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Siegal, Burton L., to Tiffany Industries, Inc. Shelf support structure. 3,834,659, Cl. 248-245.000.

Siemens Adtiengesellschaft: *See—*
Preuss, Bernhard, 3,835,275.

Siemens Aktiengesellschaft: *See—*
Bazant, Erich; Cerjak, Horst; and Scholz, Manfred, 3,834,740.
Dietze, Wolfgang; Emeis, Reimer; Keller, Wolfgang; Muehlbauer, Alfred; and Reuschel, Konrad, 3,834,349.
Helwig, Hans, 3,835,320.
Hermstein, Wolfgang; and Maenicke, Eckart, 3,835,353.
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Schmidt, Fritz; Matthaus, Gunther; and Massek, Peter, 3,835,239.
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Sierra Engineering Company Division of Cap Tech, Inc.: *See—*
Ansite, William K.; and Mitchell, John J., Jr., 3,833,935.

Sieurin, Donald; and Anderson, Robert, to Morgan Construction Company. Switching mechanism for cropping and sampling front and back ends of bar product delivered from mill. 3,834,260, Cl. 83-106.000.

Signode Corporation: *See—*
Huson, Gale, 3,834,297.

Sigott, Siegfried, to Vereinigte Osterreichische Eisen- und Stahlwerk-Alpine Montan Aktiengesellschaft. Divided tool cutter head have torque yielding coupling. 3,834,763, Cl. 299-85.000.

Sihvonen, Kauno E., to Gould, Inc. Apparatus for measuring roundness, concentricity, flatness and axis squareness. 3,834,032, Cl. 33-174.0td.

Sikes, Bob L.: *See—*
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Sikorski, Frank B.: *See—*
Prescher, Kenneth E.; Schauer, Ronald E.; and Sikorski, Frank B., 3,835,260.

Silbert, Leonard S.; and Konen, Dolores A., to United States of America, Agriculture. Phosphoric-carboxylc acid anhydrides. 3,835,203, Cl. 260-935.000.

Siler, Charles A., to Outboard Marine Corporation. Side gas seal means for rotary mechanisms. 3,834,845, Cl. 418-142.000.

Silva, Claudio De Sa E, to Info Systems, Inc. Power output stage for use in low-power radio frequency transmitters. 3,835,390, Cl. 325-105.000.

Simeth, Claus, to Roland Offsetmaschinenfabrik Faber & Schleicher AG. Pile delivery with safety device. 3,834,495, Cl. 187-29.00r.

Simkhovich, Fridrikh Levikovich: *See—*
Kaljuko, Alexei Yakovlevich; Simkhovich, Fridrikh Levikovich; Cherednik, Nina Fedorovna; Pravednaya, Ljudmila Dmitrievna; Kasakov, Alexei Mikhailovich; Saposhkov, Alexandr Mikhailovich; and Lischinsky, Anri Iosifovich, 3,835,250.

Simmons, Bjorn Herman Olof, to Aktiebolaget Bofors. Parachute-borne flare assmblage. 3,834,312, Cl. 102-35.400.

Simms, Michael L.: *See—*
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Simon, Henry, Limited: *See—*
Clancy, James Roger, 3,834,418.

Simon, Lewis B.: *See—*
Daughenbaugh, Raymond S.; Simon, Lewis B.; and Braun, Frank R., 3,833,954.

Simond, Ludger. Joint assembly for striking tool. 3,834,826, Cl. 403-374.000.

Sindelar, William Frank: *See—*
Abell, William David; and Sindelar, William Frank, 3,834,252.

Sinfelt, John H.; and Barnett, Allan E., to Esso Research and Engineering Company. High severity reforming process with a platinum-iridium catalyst. 3,835,034, Cl. 208-139.000.

Singer Company, The: *See—*
Adair, John D., 3,835,372.
Adams, Kenneth D.; and Herron, William L., 3,834,334.
La Police, George D.; and Odermann, Charles R., 3,834,335.
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Singmaster & Breyer: *See—*
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Sinnema, Hendrik, to Hubert, W., & Co. Machinefabriek N.V. Endless belt guiding means for feeding material into a series of molds. 3,834,851, Cl. 425-261.000.

Sioli, Giancarlo: *See—*
Giuffre, Luigi; Sioli, Giancarlo; and Mattone, Roberto, 3,835,124.

Sisley, James R., to Sweden Freezer. Blood drip chamber. 3,834,386, Cl. 128-214.00c.

Sisson, Warren G.: *See—*
Mahlman, Harvey A.; and Sisson, Warren G., 3,835,040.

Sissons, Anthony Chamberlen; and Cairns, Malcolm, Anthony, to Pyrotenax Limited. Method of manufacturing a composite metal sheathed welding electrode. 3,834,002, Cl. 29-420.500.

Sitnikova, Ljudmila Vladimirovna: *See—*
Lazareva, Elena Nikolaevna; Belozerova, Olga Petrovna; Efimova, Tamara Ivanovna; Sitnikova, Ljudmila Vladimirovna; and Krjuchkova, Alexandra Pavlovna, 3,835,190.

Sitton, Ellis A.: *See—*
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Sivakoff, William J.: *See—*
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Skeen, Gary R.: *See—*
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Skobelev, Konstantin Ivanovich: *See—*
Levin, Igor Anatolievich; Skobelev, Konstantin Ivanovich; Levkovich, Lev Iosifovich; and Pavljuk, Boris Andreevich, 3,835,269.

Skreiner, Klaus M., to General Electric Company. Circuit breaker operating mechanism for high-speed low-energy tripping means. 3,835,277, Cl. 200-318.000.

Slaker, Frank A.: *See—*
Carlson, Carl H.; and Slaker, Frank A., 3,834,464.

Slovensky, Mike J., Jr., to Cleveland Hardward & Forging Co. Multiple latch lock assembly and method. 3,834,747, Cl. 292-38.000.

Smart, Daniel Henry, to Communications Patents Limited. Wired broadcasting systems. 3,835,244, Cl. 178-5.600.

Smeltzer, Paul; and Daneck, David A., to Maremont Corporation. Apparatus for cutting exhaust system tubes. 3,834,019, Cl. 30-92.000.

Smerz, Otto: *See—*
Mengler, Helmut; Rosch, Gunter; Schinzel, Erich; and Smerz, Otto, 3,835,126.

Smestad, Delmar L. Tapering tool. 3,834,254, Cl. 82-4.00c.

Smid, Vlastimil: *See—*
Novosad, Jan; Bazant, Vladimir; Smid, Vlastimil; and Majzlik, Ratibor, 3,834,624.

Smith, David B.; and Gribens, Joel A., to Grace, W. R., & Co. Flowed-in polyurethane gaskets for pail and drum covers. 3,834,578, Cl. 220-46.00r.

Smith, Dennis D., to Zenith Radio Coroporation. Television channel indicating tab with automatic VHF/UHF switching. 3,835,395, Cl. 325-459.000.

Smith, Fred E.: *See—*
Sevik, Maurice M.; and Smith, Fred E., 3,834,626.

Smith, Glen C., to Eastman Kodak Company. Apparatus for sensing and measuring tension of tow entering a staple fiber cutter. 3,834,263, Cl. 83-346.000.

Smith, Harold F.: *See—*
French, Horace Edgar, III; and Smith, Harold F., 3,834,180.

Smith, Lowell R.: *See—*
Frazier, Harry W.; Smith, Lowell R.; and Wagenknecht, John H., 3,835,000.

Smith, Matthew S.: *See—*
Filippi, Ernest A.; and Smith, Matthew S., 3,834,056.

Smith, Troy F., Jr., to Mead Corporation, The. Clipboard and novel hinge connections. 3,833,970, Cl. 24-67.500.

Smits, Denis L., to Superseal Corporation. Double glazed window assembly. 3,834,097, Cl. 52-172.000.

Smolinski, Richard C. Practice golf club. 3,834,714, Cl. 273-183.00d.

Snam Progetti S.p.A.: *See—*
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Snia Viscosa Societa' Nazionale Industria Applicazioni Viscosa S.p.A.: *See—*
Giuffre, Luigi; Sioli, Giancarlo; and Mattone, Roberto, 3,835,124.

Soames, Michael Richard, to Image Analysing Computers Limited. Field illumination for image analysis. 3,835,247, Cl. 178-7.200.

Societa Italiana Resine S.I.R. S.p.A.: *See—*
Colombo, Paolo; and Galliverti, Marco, 3,835,065.

Societe a Responsabilite Limitee dite: Societe d'Etude et d'Exploitation de Marques Mar-Pha: *See—*
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Societe Anonyme Automobiles Citroen: *See—*
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Societe Anonyme dite: Societe Europeenne de: *See—*
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Societe Anonyme dite: Vallourec (Usines a Tubes de Lorraine-Escaut et Vallourec Reunies): *See—*
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Societe C.M.V.: *See—*
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Societe d'Assistance Technique pour Produits Nestle S.A.: *See—*
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Societe d'Etudes et de Diffusion de Procedes et Brevets S.A.: *See—*
Casanovas, Lorenzo Puig; and Vellas, Jean Leon Justin, 3,835,018.

Societe D'Etudes et de Realisations: *See—*
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Societe d'Etudes, Recherches et Constructions Electroniques (S.E.R.C.E.L.): *See—*
Angelle, Philippe; and Naudot, Jean-Claude, 3,835,456.

Societe d'Exploitation d'Outillage et Usinage de Precision Georges Froquet sigle S.E.O.U.P.: *See—*
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Societe Generale de Constructions Electriques et Macaniques (Alsthom): *See—*
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Societe National Industriele Aerospatiale: *See—*
Rouyer, Georges Aimable Theophile; and Fremont, Maurice Henri Louis, 3,834,199.

Soderholm, Leo H., to United States of America, Agriculture. System for operating three-phase induction motor under balanced conditions for changing loads. 3,835,356, Cl. 318-221.00r.

Solaroli, Sergio, to Finike Italiana Marposs-Soc, In accomandita Semplice di Mario Possati & C. Device for transport and gauging of mechanical pieces particularly used on automatic measuring machines. 3,834,532, Cl. 209-82.000.

Solomon, David Henry: *See—*
Hodgkin, Jonathan Howard; Hawthorne, David Geoffrey; Swift, Jean Drummond; and Solomon, David Henry, 3,834,923.

Solonitsyn, Rem Alexandrovich; Vjukov, Ivan Elizarovich; Gorbachev, Leonid Alexeevich; Belonogov, Anatoly Mikhailovich; Vorobiev, Gennady Afanasievich; and Efimov, Alexandr Vasilievich. Method and apparatus utilizing the effects of cavitation in the treatmnt of fibrous suspensions. 3,834,982, Cl. 162-1.000.

Solter, Robert L.; and Hansen, Franklin A., to Continental Disc Corporation. Reverse buckling disc arrangement for direct mounting. 3,834,581, Cl. 220-89.00a.

Solvay & Cie: *See—*
Bequet, Jean Francois; Dubois, Paul; and Van Asbroeck, Roger, 3,834,853.

Somekh, George S.: *See—*
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Somerville, Robert: *See—*
Marquis, Byron; and Somerville, Robert, 3,835,215.

Somerville, Robert L. Potassium phosphate fertilizer process. 3,834,886, Cl. 71-34.000.

Sommer, G. M., Co., Inc.: *See—*
Sommer, Gordon M., 3,834,502.

Sommer, Gordon M., to Sommer, G. M., Co., Inc. Variable speed drive with electronic control means. 3,834,502, Cl. 192-104.00f.

Sondell, Jan Ivar: *See—*
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Sony Corporation: *See—*
Hoshi, Kinji; and Sugita, Kazuhiro, 3,834,083.

Soref, Richard A., to Beckman Instruments, Inc., mesne. Liquid crystal electric field sensing measurement and display device. 3,834,794, Cl. 350-160.01c.

Sorensen, Robert N. Inflatable crib. 3,833,947, Cl. 5-94.000.

Soule, Frank A. Safety belt for use on motor vehicles. 3,834,758, Cl. 297-389.000.

Sousan, Andre Levy. Electronic random predictor. 3,834,710, Cl. 273-138.00a.

Southwire Company: *See—*
Berry, Milton E., 3,834,444.

Souza, Anthony J.; and Martin, Harlan W., to Woodstream Corporation, mesne. Live animal trap. 3,834,063, Cl. 43-61.000.

Sowards, Norman K., to Environmental Products, Inc. Low pollution incineration of solid waste. 3,834,326, Cl. 110-8.00r.

Spadon, Luciano J.: *See—*
Klaassen, Dirk; Spadon, Luciano J.; and Tiessens, Meindert, 3,835,106.

Spampinato, Dominic P.: *See—*
Dennnard, Robert H.; and Spampinato, Dominic P., 3,834,959.

Specht, Hans; Kroll, Bruno; and Gruttner,Alfred, to Continental Gummi-Werke Aktiengesellschaft. Electrical conductor element for checking possible damage to conveyor belts, and conveyor belt equipped with such conductor element. 3,834,518, Cl. 198-40.000.

Spector, Donald, to Rubin, Sam. Double-acting hydraulic exerciser. 3,834,696, Cl. 272-79.00c.

Spedden, Henry Rush; and Malouf, Emil Edward, to Kennecott Copper Corporation. In-situ generation of acid for in-situ leaching of copper. 3,834,760, Cl. 299-5.000.

Spedden, Henry Rush; and Last, Arthur W., to Kennecott Copper Corporation. Process for recovering molybdenum values from molybdenite ore materials. 3,834,894, Cl. 75-2.000.

Sperry Rand Corporation: *See—*
Blosser, Robert L.; and Cranney, William D., 3,834,799.
Cherian, Gabriel B., 3,834,592.
McClellan, Amos E.; and Daugherty, Donald E., 3,834,780.
Pichierri, Ronald F., 3,834,805.
Tolmie, Robert J., 3,834,017.

Sprague Electric Company: *See—*
Kahn, Manfred, 3,835,434.

Spreckelmeyer, Bernhard; Hinsche, Friedrich; and Schabach, Werner, to Bayer Aktiengesellschaft. Production of synthetic anhydrite. 3,834,917, Cl. 106-109.000.

Square D Company: *See—*
Clarke, Geoffrey, 3,835,352.
Karch, Walter C.; Marien, Kenneth J.; and Mierendorf, Robert C., 3,835,425.

Squibb, E. R. & Sons, Inc.: *See—*
Denzel, Theodor; and Hoehn, Hans, 3,835,144.

Squires, Robert W.: *See—*
Feren, Conrad J.; and Squires, Robert W., 3,835,062.

St. Clair, David J.: *See—*
Meier, Dale J.; and St. Clair, David J., 3,835,053.

Stach, Leonard J., to Velsicol Chemical Corporation. Alkoxyimino carbamoyloxy phosphorus. 3,835,205, Cl. 260-938.000.

Stackawicz, Carl. Fishing reel and appurtenance. 3,834,644, Cl. 242-84.20g.

Staley, A.E., Manufacturing Company: *See—*
Schreckendgust, Jay G., 3,834,801.

Stamicarbon B.V.: *See—*
Tinkelenberg, Arie, 3,835,083.

Stamicarbon N.V.: *See—*
Klaassen, Dirk; Spadon, Luciano J.; and Tiessens, Meindert, 3,835,106.

Standard Brands Incorporated: *See—*
Khaleeluddin, Khaja; Sutthoff, Robert Fredric; and Nelson, William Junior, 3,834,940.

Standard Oil Company: *See—*
Aker, James E., 3,834,585.
Bertolacini, Ralph J.; Lehmann, Gerald M.; and Wollaston, Eugene G., 3,835,031.
Johncock, Allan W., 3,834,830.

Standard Telephones and Cables Limited: *See—*
Hodges, Robert James, 3,834,350.

Standing, Clifford R. Device to repair damaged doors and walls. 3,834,107, Cl. 52-514.000.

Stanley, Edward B.: *See—*
Brickner, Kenneth G.; and Stanley, Edward B., 3,834,948.

Stanway, E., to United Merchants and Manufacturers, Inc. Apparatus and fluid treatment fabric in rope form. 3,834,194, Cl. 68-176.000.

Stapleton, Thomas T.; and Farrar, Reed A., to General Motors Corporation. Method and apparatus for surface defect detection using detection of non-symmetrical patterns of non-specularly reflected light. 3,834,822, Cl. 356-200.000.

Stark, Jurt; Gropper, Hans; Urban, Friedrich; and Pfannmueller, Helmut, to Badische Anilin & Soda-Fabrik Aktiengesellschaft. Production of low molecular weight waxy poly-ethylenes. 3,835,107, Cl. 260-94.90r.

Starting Industry Company Limited: *See—*
Morishige, Toshinori, 3,834,645.

Stary, Josef: *See—*
Havranek, Zdenek; Jiskra, Miroslav; Kubovy, Miroslav; Stary, Josef; and Vierikova, Vera, 3,834,147.

Staub, Fred W.: *See—*
Jaster, Heinz; Kosky, Philip G.; and Staub, Fred W., 3,834,835.

Staubli Ltd.: *See—*
Muller, Otto, 3,834,426.

Stauffer Chemical Company: *See—*
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Weil, Edward D., 3,835,204.

Stauffer, Harry C.: *See—*
Frayer, James A.; and Stauffer, Harry C., 3,835,022.

Stauter, John C.: *See—*
McGuire, Stephen E.; Stauter, John C.; and Kennedy, Carl D., 3,834,533.

Steck, William F., III, to Weaver, W.R., Company. Mount for gunsight. 3,834,052, Cl. 42-1.00s.

Steel Company of Canada, Limited, The: *See—*
Prenn, Otto E., 3,835,233.

Steelcase Inc.: *See—*
Tacke, William H.; Ormiston, Robert B.; and McKay, Robert H., 3,834,093.

Steeper, Hugh, (Roehampton) Limited: *See—*
Collins, Dennis William, 3,833,942.

Steiger, James A.: *See—*
Hubbard, Don P.; Levake, Richard N.; and Steiger, James A., 3,833,996.

Stephens, N. S., Company, Inc.: *See—*
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Sterling Drug Inc.: *See—*
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Dickinson, William B.; and Vaupotic, Marcia P., 3,835,145.

Sterne, Frank: *See—*
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Stettner, Ernest R.: *See—*
Stoltman, Donald D.; and Stettner, Ernest R., 3,834,843.

Stewart, Alice. Method for making three-dimensional stitchery ornaments. 3,833,977, Cl. 28-77.000.

Stewart, Jack F.: *See—*
Darlinger, Edward P.; Downs, William; and Stewart, Jack F., 3,834,129.

Stiebel, Ariel, to Radex Corporation. Digital foot measuring instrument. 3,834,029, Cl. 33-3.00c.

Stiefelmeyer, Guenther; and Schumm, Guenther. Arranagement for compensating for changes in the operating characteristics of a measuring element. 3,835,313, Cl. 250-206.000.

Stock, William G.: *See—*
Williams, Fred S.; and Stock, William G., 3,835,002.

Stolarik, Eugene, to Control Techniques Corporation. Pendulum-type inertia sensor switch. 3,835,273, Cl. 200-61.480.

Stolt, Nils Tomas; and Akerberg, Dag E., to Telefonaktiebolaget L M Ericsson. Code receiver in staff locator. 3,835,394, Cl. 325-321.000.

Stoltman, Donald D.; and Stettner, Ernest R., to General Motors Corporation. Rotary engine oil metering pump. 3,834,843, Cl. 418-84.000.

Stoltzfus, Henry S.; and Stoltzfus, John S., to Lancaster Level-Flo, Inc. Distributor head for silo fill pipe. 3,834,768, Cl. 302-60.000.

Stoltzfus, John S.: *See—*
Stoltzfus, Henry S.; and Stoltzfus, John S., 3,834,768.

Stone Container Corporation: *See—*
Johnson, Richard H., 3,834,114.

Stone, Richard W. Bicycle lock. 3,834,196, Cl. 70-18.000.

Stora Kopparbergs Bergslags Aktiebolag: *See—*
Hellman, Per Ingvar; and Sondell, Jan Ivar, 3,834,629.

Storer, S. A., & Sons Company: *See—*
Kummerow, Jack A. C., 3,834,973.

Storlie, Llewellyn O.: *See—*
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Strasburg, Richard N.; and Critchlow, Ezra F., to Avco Corporation. Aircraft engine flexible coupling. 3,834,181, Cl. 64-1.00v.

Strehlke, Peter, to Schering Aktiengesellschaft. 2-Acyl-5-nitrothiazole derivatives. 3,835,131, Cl. 260-243.00b.

Stricklin, Bobby Joe: *See—*
Mueller, Fritz Kurt; Martin, Billy Otis; Martin, Robert Cherry; Stricklin, Bobby Joe; and Weeks, Raymond Leland, 3,834,238.

Stroezel, Reinhold: *See—*
Hettich, Alfred; and Stroezel, Reinhold, 3,834,468.

Strube, Herbert A.: *See—*
Bracht, Karl Friedrich; Strube, Herbert A.; and Sacht, Hans Otto, 3,834,141.

Strumbos, William P. Cryogenic transportation method and apparatus therefor. 3,834,174, Cl. 62-47.000.

Strumbos, William P. Reinforced foamed-panel structure. 3,834,962, Cl. 156-79.000.

Strybel, Richard V., to Imperial-Eastman Corporation. Tube coupling. 3,834,743, Cl. 285-249.000.

Strycker, Wallace Glenn: *See—*
Havera, Herbert John; and Strycker, Wallace Glenn, 3,835,151.

Stuart, Gerald L.: *See—*
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Stuck, Klaus: *See—*
Belsdorf, Manfred; and Stuck, Klaus, 3,834,247.

Students, John, to Wiss, J., & Sons Co. Low-profile floating blade scissors or shears. 3,834,022, Cl. 30-261.000.

Sturm, Bernard J.: *See*—
Parkinson, William W., Jr.; Kelly, Minton J.; and Sturm, Bernard J., 3,835,122.
Sturtevant, Paul A. Disposal system utilized with a heat source. 3,833,943, Cl. 4-10.000.
Stute, Walter, to Pernod S.A. Device for dispensing rolling articles. 3,834,584, Cl. 221-312.000.
Subsea Equipment Associates Limited (Seal): *See*—
Brun, Andre; Jaffe, Albert; and De Panafieu, Philippe, 3,834,460.
Subsea Equipment Associates Limited, mesne: *See*—
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Suda, Kataro: *See*—
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Suga, Hiroyoshi: *See*—
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Suggitt, John W.; and Inkis, Walter V. Apparatus for applying preservative material to erected poles and the like. 3,834,329, Cl. 111-6.000.
Sugita, Kazuhiro: *See*—
Hoshi, Kinji; and Sugita, Kazuhiro, 3,834,083.
Sugiura, Susumu: *See*—
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Sukegawa Electric Co., Ltd.: *See*—
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Sullivan, John Terence; and Littlefair, Robert George, to Imperial Chemical Industries Limited. Spraying substances. 3,834,623, Cl. 239-139.000.
Sulzer Brothers Ltd.: *See*—
Pfarrwaller, Erwin, 3,834,635.
Sumi, Tooru: *See*—
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Mori, Kenjiro; Takemoto, Yasuzi; and Ikebe, Shigueaqui, 3,835,077.
Summers, C. Elwood. Art instructing apparatus. 3,834,043, Cl. 35-26.000.
Sun Oil Company of Pennsylvania: *See*—
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Wolff, David F.; De Boer, Herman O.; Tiger, Emil; and McCarthy, James G., 3,834,814.
Sund, Erik Ivar. Heat insulating protective cover for temperature sensitive goods. 3,834,292, Cl. 98-32.000.
Sundstrand Heat Transfer, Inc.: *See*—
De Cicco, Michael A., 3,833,986.
Superseal Corporation: *See*—
Smits, Denis L., 3,834,097.
Supran, Michael K.; Parekh, Kantilal G.; and Berzins, Leonids, to Lipton, Thomas J., Inc. Fiber-alingning extrusion nozzle. 3,834,849, Cl. 425-206.000.
Surletta, Zygmunt M.; Klicki, Chester E.; and Nowack, Robert A., to Lear Siegler, Inc. Box spring assembly. 3,833,948, Cl. 5-247.000.
Sutthoff, Robert Fredric: *See*—
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Sutton Engineering Company: *See*—
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Sutton Research Corporation: *See*—
Briskin, Theodore S.; Schnautz, Norman G.; and Sabherwal, Inderjit, 3,834,398.
Suvanto, Antti, to Aktiebolaget Asea-Atom. Control rod for nuclear reactors. 3,834,986, Cl. 176-33.000.
Suzuki, Kunio: *See*—
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Suzuki, Yoshiki: *See*—
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Swaine, Harry Dugdale. Power transmission system. 3,834,244, Cl. 74-219.000.
Swan Hunter Group Limited: *See*—
Rutherford, Robert, 3,834,339.
Sweden Freezer: *See*—
Sisley, James R., 3,834,386.
Swensson, Earl S., to University of Mississippi, The. Article storing and dispensing module. 3,834,777, Cl. 312-209.000.
Swett, James P.; and Ashton, Harold P. Mold for ingestible substances. 3,834,437, Cl. 150-.500.
Swift & Company: *See*—
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Swift, Jean Drummond: *See*—
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Swis, Philip E.; Labeau, Russell; and Brown, Glenn M., to Cross Company, The. Test stand for vehicle engines. 3,834,221, Cl. 73-116.000.
Swiss Aluminium Ltd.: *See*—
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Swoboda, Karl; Kulmburg, Alfred; and Bloch, Rupert, to Gebr. Bohler & Co. Aktiengesellschaft. Two-stage process of surface-hardening workpieces of hardenable ferrous alloys. 3,834,947, Cl. 148-12.000.
Sybron Corporation: *See*—
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Joslyn, Larry James, 3,834,872.
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Tabor, Loring E., to Imbertson, N. M. & Associates, Inc. Collapsible dam and damming method. 3,834,167, Cl. 61-30.000.
Tack, Carl E., to Trans Dyne, Inc. Spring mounted snubber wear plate. 3,834,320, Cl. 105-197.00d.
Tacke, William H.; Ormiston, Robert B.; and McKay, Robert H., to Steelcase Inc. Panel jointure system. 3,834,093, Cl. 52-71.000.
Tafapolsky, Bernard; and Flaherty, Francis Edward, to Gillette Company, The. Ceramic cutting instruments. 3,834,265, Cl. 83-651.000.
Taiheiyo Coal Mining Co., Ltd.: *See*—
Nakajima, Shigeo, 3,834,762.
Takada, Takezo, to Takata Kojyo Co., Ltd. Vehicle safety device. 3,834,496, Cl. 188-136.000.
Takahashi, Isao; Fujii, Motoharu; Kawakubo, Kazuo; Ariga, Masao; and Sugiura, Susumu, to Canon Kabushiki Kaisha. Electronic photographic copying machine. 3,834,808, Cl. 355-3.00r.
Takamiya, Youichi; Sasaguri, Kiichiro; Sano, Hiroshi; Okina, Katsumi; and Kawachi, Sunao, to Shin Nihon Kagaku Kogyo Kabushiki Kaisha. Containing resin composition as thickening agent. 3,835,088, Cl. 260-33.6ua.
Takase, Sinji; and Shioiri, Tomonori, to Nippon Oil Company, Limited. Method of preparing hydrocracking catalysts and process. 3,835,026, Cl. 208-111.000.
Takata Kojyo Co., Ltd.: *See*—
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Takeda, Hiroshi: *See*—
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Takeshita, Tomon; and Ozaki, Shigetsugu, to Kabushiki Kaisha Toyota Chud Kenkyusho. Method and device for controlling fuel injection. 3,834,362, Cl. 123-32.0ea.
Takeuchi, Hideo, to Minolta Camera Kabushiki Kaisha. Automatic diaphragm setting device for camera. 3,834,039, Cl. 354-42.000.
Takeuchi, Tomio: *See*—
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Takewell, Robert B.; Brandon, Paul W.; and Odom, Paul R., to Huber, J. M., Corporation. Apparatus for agglomerating powders. 3,834,850, Cl. 425-222.000.
Takiron Co., Ltd.: *See*—
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Tanabe, Isao, to Japan Metals and Chemcials Co., Ltd. Method of manufacturing low-carbon ferrochromium. 3,834,899, Cl. 75-130.500.
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Tarui, Yoshio: *See*—
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Tate & Lyle Limited: *See—*
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Tate, Bryce E.; and Berg, Rudolph G., to Pfizer Inc. Synthesis of citraconic anhydride. 3,835,162, Cl. 260-346.80r.
Tatina, Richard A.: *See—*
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Tatsuoka, Yoshio; Igarashi, Tsutomu; Yoshida, Osamu; and Miyachi, Takayoshi, to Toray Industries, Inc. Process of manufacturing polyester fiber article having high pilling resistance. 3,834,868, Cl. 8-130.001.
Tatsuta, Sumitaka; and Ueno, Wataru, to Fuji Photo Film Co., Ltd. Process for producing photographic material. 3,834,928, Cl. 117-34.000.
Tauern, Dankmar: *See—*
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Taylor, Dale: *See—*
Hunter, Roland L., 3,834,656.
Taylor, Kendrick, 20% to Lee, Raymond, Organization, Inc., The. Napkin for ties. 3,833,937, Cl. 2-46.000.
Teach, Eugene G., to Stauffer Chemical Company. Phenoxy acetals and their utility as herbicides. 3,835,171, Cl. 260-455.00a.
Tee-Pak, Inc.: *See—*
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Teem Incorporated AB: *See—*
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Telecommunications Radioelectriques et Telephoniques T.R.T.: *See—*
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Telefonaktiebolaget L M Ericsson: *See—*
Stolt, Nils Tomas; and Akerberg, Dag E., 3,835,394.
Telefonaktiebolaget L.M. Ericsson: *See—*
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Overby, Sune Lambert, 3,835,264.
Telex Computer Products, Inc.: *See—*
Crofford, Tommy R., 3,835,383.
Tempero, Robert, to Transfresh Corporation. Porting apparatus for a refrigerated storage chamber. 3,834,577, Cl. 220-42.00r.
Templin, Lawrence R., to Hughes Aircraft Company. Detector circuits for signal transmission. 3,835,379, Cl. 324-58.00b.
Tennnant Company: *See—*
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Terai, Kenji: *See—*
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Terry, C. Edward, to Textile Rubber and Chemical Company, Inc. Method of promoting separation between a heated curing surface and a backing material. 3,834,961, Cl. 156-72.000.
Terzian, Rouben T.; and Glass, Marvin I., to Glass, Marvin, & Associates. Doll with coordinated head and torso movement. 3,834,071, Cl. 46-120.000.
Teti, John J., to A-T-O Inc. Battery carrier. 3,834,563, Cl. 214-77.00r.
Tex-a-dyne: *See—*
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Allison, Jean B.; Bissada, Kadry K.; and Peterson, Christine M., 3,834,122.
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Maddox, Jim, Jr.; Zimmerman, Margaret J.; and Tuggle, Ray, 3,835,060.
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Texas Instrumetns, Incorporated: *See—*
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Thakore, Kaushik H., to Bendix Corporation, The. High energy output inductive ignition system. 3,835,350, Cl. 315-209.00t.
Thalacker, Richard E., to Detrex Chemical Industries, Inc. Apparatus for cleaning small items. 3,834,408, Cl. 134-83.000.
Theodorides, Panos C. Outlet box with adjustable mounting. 3,834,658, Cl. 248-205.00r.
Thermon Manufacturing Company: *See—*
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Thiruvillakkat, Krishnan: *See—*
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Thle, Josef, to Ungerer, Irma, Frau. Machine for wrap forming metal strip as it is uncoiled. 3,834,204, Cl. 72-183.000.
Thomas, David Everitt, to Monsanto Limited. Suspension polymerization process. 3,835,073, Cl. 260-2.50b.
Thomas, Klaus: *See—*
Ost, Walter; Thomas, Klaus; and Jerchel, Dietrich, 3,835,184.
Thompson, Arnold M. Cartridge-actuated device for inflating tires and the like. 3,834,433, Cl. 141-392.000.
Thompson, Claude W. Trap for removing solid particles from a liquid circulating system. 3,834,539, Cl. 210-167.000.
Thompson, Elbert Gordon, to Sutton Engineering Company. Straightening machine. 3,834,203, Cl. 72-164.000.
Thompson, Jimmy M., to Procter Chemical Company, Inc. Durable press textile materials by anhydrous solvent finishing process. 3,834,871, Cl. 8-187.000.
Thompson, Wallace T., to GTE Sylvania Incorporated. Neutralized amplifier circuit. 3,835,406, Cl. 330-27.000.
Thomson-CSF: *See—*
Bertheas, Jean, 3,835,448.
Hartemann, Pierre, 3,835,422.
Thorngate, John A.; and Perdue, Phillip T., to United States of America, Atomic Energy Commission. Stable pulsed light source. 3,835,331, Cl. 250-552.000.
Thorpe, David C., to Richmond Marine Limited. Marine craft. 3,834,340, Cl. 114-201.00r.
Thousand, John L., to Revcon, Incorporated. Wheel adapter. 3,834,766, Cl. 301-9.0dn.
Thum, Oskar. Orthopedic appliance. 3,834,376, Cl. 128-80.00a.
Thurman, Michael Bruce: *See—*
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Tiessens, Meindert: *See—*
Klaassen, Dirk; Spadon, Luciano J.; and Tiessens, Meindert, 3,835,106.
Tietze, Werner, to Varta Aktiengesellschaft. Sealed galvanic battery cell and method for its manufacture. 3,834,942, Cl. 136-14.000.
Tiffany Industries, Inc.: *See—*
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Tiger, Emil: *See—*
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Timex Corporation: *See—*
Wuthrich, Paul, 3,834,155.
Tinkelenberg, Arie, to Stamicarbon B.V. Melamine-formaldehyde resin solutions. 3,835,083, Cl. 260-29.40r.
Titmus, Robert A.: *See—*
Bryson, Millard C.; McKinney, Joel D.; Titmus, Robert A.; and White, Frederick K., 3,835,023.
Tobias, John D. Method of making spool valves. 3,833,988, Cl. 29-157.10r.
Tokorozawa Electronics Corporation: *See—*
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Tokyo Keiki Co., Ltd.: *See—*
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Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
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Tokyo Sibaura Electric Co., Ltd.: *See—*
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Tokyo Toyo Rubber Industry Co., Ltd.: *See—*
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Tolmie, Robert J., to Sperry Rand Corporation. Dry shaver with hair guiding and skin stretching means. 3,834,017, Cl. 30-34.200.
Tomita, Masao; Fujisawa, Kiyoji; and Miura, Takashi, to Matsushita Electric Industrial Co., Ltd. Signal control circuit. 3,835,401, Cl. 328-172.000.
Tomlinson, Edward G., to Uniroyal, Inc. Method of forming a splice in a toothed power transmission belt. 3,833,998, Cl. 29-401.000.
Tomoegawa Paper Manufacturing Co., Ltd.: *See—*
Fujita, Hideo; Ishitobi, Masami; Suga, Hiroyoshi; Itohara, Fukuo; Matsushita, Michiharu; and Yamamoto, Hiroshi, 3,835,006.
Tonseth, Ivar Scott, Jr.: *See—*
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Torsch, Charles E., to GTE Sylvania Incorporated. Winding crown for inline gun deflection yoke. 3,835,426, Cl. 335-210.000.
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Tre-X Injector Systems Company: *See*—
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Treichel, Richard, to Deere & Company. Hydraulic steering for tractors and like vehicles. 3,834,284, Cl. 92-136.000.
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Krippene, Brett C.; Clark, Merle M.; and Triffon, Apostol, 3,834,858.
Trimble, Robert C. Decorative and safety attachment for spoke wheels. 3,834,765, Cl. 301-37.00r.
Trimmier, John R.: *See*—
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Triplett, Lee Magna; and Peterson, Wilmer R., to Expando Products Company. Fastener. 3,834,270, Cl. 85-70.000.
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Hengelhaupt, Hans-Georg, 3,834,511.
Tromborg, Erik T.: *See*—
Harris, William A.; Schluter, Bernard C.; and Tromborg, Erik T., 3,835,328.
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TRW Inc.: *See*—
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Tsuburaya, Shigeo: *See*—
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Tsuchiya, Teruo; Imai, Hisashi; and Motegi, Ryohei, to Tokyo Keiki Co., Ltd. Dog clutch. 3,834,500, Cl. 192-67.00r.
Tsuge, Yasuhiko; and Koizumi, Noboru, to Matsushita Electric Industrial Company, Limited and Sekisui Kagaku Kogyo Kabushiki Kaisha. Vibration diaphragm and cone edge of a loudspeaker. 3,834,486, Cl. 181-32.00r.
Tsukada, Syusei, to Canon Kabushiki Kaisha. Photo-information transmission and exposure device. 3,834,803, Cl. 355-1.000.
Tsukada, Syusei, to Canon Kabushiki Kaisha. Liquid discharging or charging device. 3,835,355, Cl. 317-262.00a.
Tsukamoto, Masahide; and Ohtsuka, Tetsuro, to Matsushita Electric Industrial Co., Ltd. Liquid crystal X-Y matrix display device. 3,835,463, Cl. 340-324.00m.
Tube, Gordon, Products Company, Inc.: *See*—
Burg, Robert J.; Lieberman, Milton; and Fiorenza, Armand A. (said Lieberman assor. to), 3,834,549.
Tucker, Charles R., to Hercules Incorporated. Textile finishing process. 3,834,870, Cl. 8-168.000.
Tuffias, Robert H.; and Larson, Harry D., to Litton Systems, Inc. Ferrohydrodynamic low-friction bearing with improved volume compensation and fluid seal. 3,834,775, Cl. 308-36.300.
Tuggle, Ray: *See*—
Maddox, Jim, Jr.; Zimmerman, Margaret J.; and Tuggle, Ray, 3,835,060.
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Turner, Roger C.; and Simms, Michael L., to General Electric Company. Refrigerator cabinet. 3,834,779, Cl. 312-214.000.
Turney, Peter Baldwin. Navigational computers. 3,835,299, Cl. 235-61.0nv.
Turney, Stephen Z. Disposable manifold with atmosphoric vent. 3,834,372, Cl. 128-2.00f.
Tyrechek, Inc., mesne: *See*—
Church, Donald E., 3,835,451.
Tyson, William H., Jr.; and Bramson, Mogens L., to Cutter Laboratories, Inc. Membrane diffusion apparatus. 3,834,544, Cl. 210-321.000.
UBE Industries, Ltd.: *See*—
Yamada, Keisho; Umemura, sumio; Odan, Kyoji; Hidaka, Mikio; and Fukuda, Kazuo, 3,835,193.
Uchida, Mitsuo; Jinno, Sigeru; Suzuki, Yoshiki; Itagaki, Ryuya; and Sumi, Tooru, to Toray Industries, Inc. Device for transducing force into pneumatic signal. 3,834,224, Cl. 73-141.00r.
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Walter, Frederick L. Method of dissolving gases in liquids. 3,835,048, Cl. 210-63.000.

Walter, Henry J.; Kronheim, John H.; and Levine, Harvey, to Clairol, Incorporated. Steam curling iron. 3,835,292, Cl. 219-222.000.

Walus, Aloysius N.: *See—*
Jeffery, Jeffery J.; and Walus, Aloysius N., 3,835,076.

Wambach, Allen D.: *See—*
Fox, Daniel W.; and Wambach, Allen D., 3,835,089.

Ward, John W., to Union Oil Company of California. Hydrogenative conversion processes and catalyst for use therein. 3,835,027, Cl. 208-111.000.

Ward, John W.; and Clark, Danford E., to Union Oil Company Of California. Hydrocracking process with rejuvenated catalyst. 3,835,028, Cl. 208-111.000.

Ward, Trevor: *See—*
Hemingway, Maurice; and Ward, Trevor, 3,834,857.

Warner, Kent F., to W & H Conveyor Systems, Inc. Pneumatic control system for a trolley dispatch network. 3,834,315, Cl. 104-88.000.

Warner-Lambert Company: *See—*
Bartell, Ralph A., 3,834,571.
Dawdowicz, Jan; and Ferraro, Frank A., 3,834,018.
Megraw, Robert E.; and Woodson, Judith C., 3,834,991.
Wittekind, Raymond R., 3,835,142.
Zinnes, Harold; and Lindo, Neil A., 3,835,156.

Washizuka, Isamu; and Kaumae, Masaru, to Sharp Kabushiki Kaisha. Multiplexing connection between a key board and an integrated circuit device. 3,834,616, Cl. 235-160.000.

Wasser, Ernest. Router bit and method of grinding said bit. 3,834,090, Cl. 51-288.000.

Watanabe, Kazuo: *See—*
Munakata, Hideaki; Watanabe, Kazuo; Arimatsu, Yoshikazu; and Tanaka, Masasazu, 3,835,099.

Watanabe, Masaharu: *See—*
Nakamura, Masakatsu; Yonezawa, Toshio; Kato, Taketoshi; Watanabe, Masaharu; and Akatsuka, Minoru, 3,834,953.

Watanabe, Masaru; and Ohashi, Azusa, to Fuji Photo Film Co., Ltd. Method of producing aluminum planographic printing plates. 3,834,998, Cl. 204-33.000.

Watanabe, Toshiaki; and Yuhara, Hideo, to Okuma Machinery Works, Ltd. Method for monitoring machining condition of machine tool. 3,834,615, Cl. 235-151.110.

Watanabe, Toshio: *See—*
Kurokawa, Junji; Watanabe, Toshio; and Asami, Tomiaki, 3,834,810.

Waters, Douglas S. J. Lockable safety door stop. 3,833,963, Cl. 16-82.000.

Watkins, Sidney C., to Avco Corporation. Flat air-blast fuel injector. 3,834,627, Cl. 239-430.000.

Wean United, Inc.: *See—*
Schmidt, Herbert K., 3,834,208.

Weatherhead Company, The: *See—*
Keady, Frederick D., 3,834,162.

Weaver, W.R., Company: *See—*
Steck, William F., III, 3,834,052.

Webb, John L., to Xerox Corporation. Electrometer system. 3,835,380, Cl. 324-72.000.

Weck, Edward, & Company, Inc.: *See—*
Hirsch, Winfred S., 3,834,390.

Wedmore, William R.: *See—*
Bieszczad, Edward S.; Wedmore, William R.; and Young, John S., 3,835,466.

Weeks, Raymond Leland: *See—*
Mueller, Fritz Kurt; Martin, Billy Otis; Martin, Robert Cherry; Stricklin, Bobby Joe; and Weeks, Raymond Leland, 3,834,238.

Weigl, James; and Davis, James E. P., to Puritan-Bennett Corporation. Respiration apparatus with flow responsive control valve. 3,834,383, Cl. 128-145.800.

Weigle, Orville C. Pipe weld inspection method and apparatus. 3,835,324, Cl. 250-360.000.

Weil, Edward D., to Stauffer Chemical Company. Hydroxyalkylphosphonate carbamates. 3,835,204, Cl. 260-938.000.

Weinmann, Carl E., to Valley Craft Products, Inc. Drum pallet. 3,834,323, Cl. 108-51.000.

Weisbert, Emanuel S. Vehicle performance indicator system. 3,835,382, Cl. 324-161.000.

Weiss, Gerhart, to Baker Brush Co., Inc. Brush fabricating apparatus. 3,834,863, Cl. 432-121.000.

Weiss, Martin Joseph: *See—*
Schaub, Robert Eugene; and Weiss, Martin Joseph, 3,835,179.

Weissman, Eugene Yehuda: *See—*
Amlie, Robert F.; and Weissman, Eugene Yehuda, 3,834,946.

Welding Research, Inc.: *See—*
Sciaky, David, 3,835,291.

Weldon, Winfred D.: *See—*
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Welger, Gebruder: *See—*
Bracht, Karl Friedrich; Strube, Herbert A.; and Sacht, Hans Otto, 3,834,141.

Werle, Eugen; and Fritz, Hans, to Farbenfabriken Bayer Aktiengesellschaft. Isolation of enzymes and enzyme inhibitors. 3,834,990, Cl. 195-68.000.

West, Donald L.: *See—*
Fowler, Raymond L.; Hill, James D.; McCornack, Richard W.; Perkins, N. Kenneth; Sendelweck, Michael L.; West, Donald L.; Williams, Thomas H.; and Yosmali, Krikor, 3,834,505.

West, Edward L., to A. B. Chance Company. Spiral conductor cover. 3,835,238, Cl. 174-5.00r.

West, Harold H.: *See—*
De Faccio, Paul L.; and West, Harold H., 3,834,120.

West, Kennard Dungan, to Air Products and Chemical, Inc. Catalyst preparation. 3,835,068, Cl. 252-455.00z.

Western Electric Company, Incorporated: *See—*
Hardesty, Edwin C., 3,835,445.
Montone, Liber J., 3,834,819.

Western Electric Company, Incorporated, mesne: *See—*
Fendley, Richard L.; Hoenig, Gerhard E.; Poehlmann, George; and Prendergast, John M., Jr., 3,834,604.

Western Gear Corporation: *See—*
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Westinghouse Electric Corporation: *See—*
Frost, Lawrence W.; and Scala, Luciano C., 3,835,207.
Mitchell, Ernest L., 3,834,831.

Westmoreland, Hollis O. Bubble test for internal combustion engines. 3,834,220, Cl. 73-47.000.

Westport International, Inc.: *See—*
Palmieri, Joseph; and French, Douglas M., 3,835,454.

Westvaco Corporation: *See—*
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Weyer, Rudi; Hitzel, Volker; Aumuller, Walter; and Heerdt, Ruth, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Benzenesulfonyl-ureas and process for their preparation. 3,835,188, Cl. 260-553.0da.

Wharton Engineers (Elstree) Limited: *See—*
Alexander, William, 3,834,673.

Wheatley, John Arthur: *See—*
Baker, William Albert; Wheatley, John Arthur; Read, Peter John; Latimer, Keith Graham; and Reynolds, Terence David Warren, 3,833,983.

Wheeldex Manufacturing Company, Inc.: *See—*
Scholfield, Richard P., 3,834,050.

Wheeler, Lionel H.: *See—*
Clavin, Edward A.; Wheeler, Lionel H.; Brooks, Robert E., Jr.; and Campbell, Wallace Clealon, Jr., 3,834,210.

Whirlpool Corporation: *See—*
Clarke, Clarence C., 3,834,176.

Whisson, Hubert James. Panel assembly. 3,834,092, Cl. 52-36.000.

White, Frederick K.: *See—*
Bryson, Millard C.; McKinney, Joel D.; Titmus, Robert A.; and White, Frederick K., 3,835,023.

White, Henry J., Jr. Method and apparatus for measuring water currents. 3,834,229, Cl. 73-170.00a.

White, Robert W.; and De Long, W. Bradford. Precision instrument system. 3,834,021, Cl. 30-232.000.

White, Ronald E., to Procter & Gamble Company, The. Process of preparing bar soap compositions and products thereof. 3,835,058, Cl. 252-121.000.

White, Russell P., Jr., to Haggar Company. Diazo printing system. 3,834,813, Cl. 355-50.000.

Whited, Charles A., to Xerox Corporation. Particle level indicator. 3,834,806, Cl. 355-3.0dd.

Wiczer, Max. Lock anti-pick device. 3,834,198, Cl. 70-208.300.

Widdig, Arno; Kuhle, Engelbert; and Kaspers, Helmut, to Bayer Aktiengesellschaft. N-alkoxycarbonyl-N'acyl-N"'-2-acylamidophenylguanidines. 3,835,164, Cl. 260-347.400.

Wiechert, Rudolf: *See—*
Furst, Andor; Furlenmeier, Andre; Langemann, Albert; Waldovogel, Guy; Hocks, Peter; Kerb, Ulrich; and Wiechert, Rudolf, 3,835,127.

Wieder, Horst K. Loudspeaker enclosure. 3,835,256, Cl. 179-1.00e.

Wiemer, Jean: *See—*
Von Jordan, Wenzel; Kleinhenz, Albert; Wiemer, Jean; and Hemmerling, Horst, 3,834,127.

Wiest, Hubert: *See—*
Bergmeister, Eduard; Ludwig, Peter; Wiest, Hubert; and Hafener, Klaus, 3,835,086.

Wilber, John A.; Rice, Verner K.; and Buhrke, Rolfe E., to GTE Automatic Electric Laboratories, Incorporated. Recovery control circuit for central processor of digital communication system. 3,835,312, Cl. 340-172.500.

Wild, Gene M., to Lilly, Eli, and Company. Cephalosporin C recovery. 3,835,129, Cl. 260-243.00c.

Wilder, Charles M. G.; and Cook, Sanford L., to Mesker Industries, Inc. Insulated door construction. 3,834,101, Cl. 52-309.000.

Wildwood Products, Inc.: *See—*
Sattler, James L., 3,834,400.

Wilhelmson, Jack L., to Sherwood Medical Industries, Inc. Fluid measuring and dispensing system. 3,834,586, Cl. 222-47.000.

Wilke, Raud A., to Koehring Company. Control valve for hydraulically operated implements. 3,834,163, Cl. 60-422.000.

Wilkens, Christian Peter, to Mayer, Karl, Textilmaschinenfabrik GmbH. Process for the production of multi-colored single face ware. 3,834,193, Cl. 66-195.000.

Willard, Wayne E., to Blue Valley Machine and Manufacturing Company. Apparatus for forming a marginal edge portion of metal work pieces. 3,834,201, Cl. 72-70.000.

Willasch, Dieter: *See—*
Muller, Karl-Heinz; Rindfleisch, Volker; Von Rauch, Moriz; Willasch, Dieter; and Dollmeier, Georg, 3,835,246.

Willem Corporation: *See—*
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Williams, Earl P.: *See—*
Azorlosa, Julian L.; and Williams, Earl P., 3,835,084.

Williams, Fred S.; and Stock, William G., to Aluminum Company of America. Brine electrolysis employing mercury cathode. 3,835,002, Cl. 204-99.000.

Williams, John W., to General Electric Company. Voltage regulator for a direct current power supply. 3,835,368, Cl. 323-17.000.

Williams, Lloyd E.: *See—*
Almagro, Guillermo; Bertorelli, Orlando L.; Mays, Robert K.; Williams, Lloyd E.; and Zimmerman, Howard F., Jr., 3,835,216.

Williams, Thomas H.: *See—*
Fowler, Raymond L.; Hill, James D.; McCornack, Richard W.; Perkins, N. Kenneth; Sendelweck, Michael L.; West, Donald L.; Williams, Thomas H.; and Yosmali, Krikor, 3,834,505.

Willis, Andrew Douglas; and Thurman, Michael Bruce, to Wilson Walton International Limietd. Apparatus for measuring the level of the contents of a container. 3,834,233, Cl. 73-290.00v.

Wilms, Willi: *See—*
Kamp, Heinz; Wilms, Willi; and Reichardt, Volker, 3,834,189.

Wilson, Carl D.: *See—*
Finke, Harry P.; Carr, Hugh B.; and Wilson, Carl D., 3,834,420.

Wilson, Mark L. Novelty smoker's pipe. 3,834,401, Cl. 131-178.000.

Wilson Walton International Limietd: *See—*
Willis, Andrew Douglas; and Thurman, Michael Bruce, 3,834,233.

Wimmer, Josef: *See—*
Kaiserswerth, Hans-Peter; Wimmer, Josef; and Schaller, Rudolf, 3,835,370.

Windmoller & Holscher: *See—*
Schwarzkopf, August, 3,834,611.

Winer, Richard: *See—*
Mellow, Dale F.; and Winer, Richard, 3,834,956.

Wing, Robert E.; and Doane, William M., to United States of America, Agriculture. Method of incorporating water soluble epoxypropyl starch into paper. 3,834,984, Cl. 162-175.000.

Winkhaus, Aug.: *See—*
Winkhaus, Wolfgang, 3,834,195.

Winkhaus, Wolfgang, to Winkhaus, Aug. Hasp and padlock arrangement. 3,834,195, Cl. 70-8.000.

Winter, Charles M. Trailer hitch mechanism. 3,834,735, Cl. 280-423.00r.

Winter, Phillip M., to Minnesota Mining and Manufacturing Company. High intensity shot peening. 3,834,200, Cl. 72-53.000.

Wisdom, Lawrence W.; and Hilton, Barney W., to Frito-Lay, Inc. Process for producing potato chips. 3,835,222, Cl. 426-49.000.

Wisenbaker, Edward M. Rotary screw switch. 3,835,272, Cl. 200-60.000.

Wiss, J., & Sons Co.: *See—*
Students, John, 3,834,022.

Witsiepe, William Kenneth: *See—*
Brown, Morton; Hoeschele, Guenther Kurt; and Witsiepe, William Kenneth, 3,835,098.

Witt, Jerry L.; Freeman, Charles F., Sr.; and Douglas, Joseph E., to Uniroyal, Inc. Method of joining two wire cords. 3,834,008, Cl. 29-447.000.

Witte, Waldemar: *See—*
Witte, Waldemar; and Langer, Alois (said Langer assor. to said Witte), 3,835,309.

Witte, Waldemar; and Langer, Alois, said Langer assor. to said Witte Witte, Waldemar. Electrical appliance powered by self-contained rechargeable battery. 3,835,309, Cl. 240-10.6ch.

Wittekind, Raymond R., to Warner-Lambert Company. 1-(2-Imidazolin-2-yl)-2-(1,2,3,4-tetrahydro-2-isoquinolyl)-2-imidazolines. 3,835,142, Cl. 260-286.00r.

Witteveen, Jan Gerardus: *See—*
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Wittlinger, Harold Allen, to RCA Corporation. Current amplifier. 3,835,410, Cl. 330-19.000.

Witzel, Bruce E.; Shen, Tsung-Ying; Graham, Patricia M.; Clark, Robert L.; and Pessolano, Arsenio A., to Merck & Co., Inc. Certain 2(1H)pyridinethiones. 3,835,143, Cl. 260-294.80t.

Wohrer, Luis C.: *See—*
Economy, James; and Wohrer, Luis C., 3,835,072.

Wolfe, Robert W.; and Carlson, Richard E. Method for forming welded seam can bodies. 3,834,010, Cl. 29-477.700.

Wolff, David F.; De Boer, Herman O.; Tiger, Emil; and McCarthy, James G., to Sunbeam Business Equipment Co. Book copier. 3,834,814, Cl. 355-51.000.

Wollaston, Eugene G.: *See—*
Bertolacini, Ralph J.; Lehmann, Gerald M.; and Wollaston, Eugene G., 3,835,031.

Wong, Raymond Woo. Footsie bird game device. 3,834,705, Cl. 273-106.00a.

Wood, James F.: *See—*
Blazewicz, Andrew J.; Piaskowski, Edward J.; and Wood, James F., 3,834,328.

Wood, Loren E.: *See—*
Ludwig, Gary Joe; and Wood, Loren E., 3,834,580.

Woodard, Robert Burns, to Ciba-Geigy Corporation. 2-Thia-cepham and cephem-4-carboxylic acids. 3,835,130, Cl. 260-243.00c.

Woodhead, Daniel, Inc.: *See—*
Kramer, David E., 3,835,311.

Wooding, Patrick J.: *See—*
Luchok, John; and Wooding, Patrick J., 3,834,447.

Woodrum, Luther Jay, to International Business Machines Corporation. Minimal redundancy decoding method and means. 3,835,467, Cl. 340-347.0dd.

Woods, Donald C.: *See—*
Sanctuary, Clifford; Woods, Donald C.; and Bachman, John A., 3,834,375.

Woodson, Judith C.: *See—*
Megraw, Robert E.; and Woodson, Judith C., 3,834,991.

Woodstream Corporation, mesne: *See—*
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Wright, Charles J., to Eastman Kodak Company. Photographic materials containing a mesylate compound as hardener and antifoggant. 3,834,902, Cl. 96-1.800.

Wright, Robert Lee, to Monsanto Company. Aqueous alkaline solution of an aldehyde conjoint condensate of resorcinol and saturated resorcinol polymer. 3,835,082, Cl. 260-29.300.

Wrzesinski, Joseph Francis, to Grace, W. R., & Co. Photocurable rapid drying water base paint made from a polyene-polythiol system. 3,835,085, Cl. 204-159.230.

Wurdeman, James A.: *See—*
Wurdeman, Marion E.; and Wurdeman, James A., 3,834,294.

Wurdeman, Marion E.; and Wurdeman, James A. Grain dryer and aerator. 3,834,294, Cl. 98-57.000.

Wuthrich, Paul, to Timex Corporation. Offset pallet lever for watch escapement. 3,834,155, Cl. 58-121.00r.

Wutzke, Paul c. Stair tread and method of producing the same. 3,834,098, Cl. 52-189.000.

Wyman, Lewis C.: *See—*
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Xerox Corporation: *See—*
Amidon, Alan B.; Mammino, Joseph; and Ferguson, Robert M., 3,834,930.
Bhagat, Gopal C.; and Veillard, George E., 3,834,804.
McCarroll, Alan F., 3,834,861.
Monahan, Alan R., 3,834,906.
Rider, Ronald E., 3,835,464.
Webb, John L., 3,835,380.
Whited, Charles A., 3,834,806.

Xonics, Inc.: *See—*
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Yabut, Keiichiro; and Shimizu, Kazuaki, to Nissan Motor Company, Limited. Hydraulic servo unit for automotive braking system. 3,834,277, Cl. 91-376.000.

Yamada, Junji: *See—*
Kurokawa, Takaaki; Yamada, Junji; Hoshika, Susumu; and Jujo, Yukio, 3,834,884.

Yamada, Keisho; Umemura, sumio; Odan, Kyoji; Hidaka, Mikio; and Fukuda, Kazuo, to UBE Industries, Ltd. Process for producing acrolein or methacrolein. 3,835,193, Cl. 260-604.00r.

Yamada, Shuri: *See—*
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Yamamoto, Hiroshi: *See—*
Fujita, Hideo; Ishitobi, Masami; Suga, Hiroyoshi; Itohara, Fukuo; Matsushita, Michiharu; and Yamamoto, Hiroshi, 3,835,006.

Yamamoto, Yasushi Stephan: *See—*
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Yancey, Leroy D. Solid state electronic stage lighting control circuit. 3,835,349, Cl. 315-194.000.

Yang, Julie C.: *See—*
Jaunarajs, Karlis L.; and Yang, Julie C., 3,835,219.

Yao, Keith C.: *See—*
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Yardley Products Corporation: *See—*
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Yardney International Corporation: *See—*
Dennison, Edward, 3,834,944.

Yariv, Amnon; and Gover, Avraham, to California Institute of Technology. Monolithic solid state traveling wave tunable amplifier and oscillator. 3,835,407, Cl. 330-5.000.

Yeager, Paul R.: *See—*
United States of America, National Aeronautics and Space Administration, 3,835,318.

Yeakey, Ernest Leon: *See—*
Gipson, Robert Malone; Yeakey, Ernest Leon; and Peppel, William Jennings, 3,835,166.

Yocco, Albert A. Nail setting tool for applying grooved paneling. 3,834,603, Cl. 227-156.000.

Yoda, Kazuhiro; and Kato, Takashi, to Kabushiki Kaisha Daini Seikosha. Electronic timpiece with a multi-timer. 3,834,153, Cl. 58-38.000.

Yokota, Yukio: *See—*
Hara, Hiroshi; Yokota, Yukio; Amano, Hiroyuki; and Nishimura, Tokio, 3,834,908.

Yonezawa, Toshio: *See—*
Nakamura, Masakatsu; Yonezawa, Toshio; Kato, Taketoshi; Watanabe, Masaharu; and Akatsuka, Minoru, 3,834,953.

Yonkers, Edward H., to Joslyn Mfg. and Supply Co. Grounded surface distribution apparatus. 3,835,439, Cl. 339-19.000.

Yoshida, Osamu: *See—*
Tatsuoka, Yoshio; Igarashi, Tsutomu; Yoshida, Osamu; and Miyachi, Takayoshi, 3,834,868.

Yoshino, Takao, to Kabushiki Kaisha Komatsu Seisakusho. Apparatus for mounting a marine engine. 3,834,344, Cl. 115-34.00r.

Yoshizawa, Michio; and Ohnishi, Masaru, to Mitsubishi Denki Kabushiki Kaisha. Electrophotographic system. 3,834,809, Cl. 355-3.00r.

Yosmali, Krikor: *See—*
Fowler, Raymond L.; Hill, James D.; McCornack, Richard W.; Perkins, N. Kenneth; Sendelweck, Michael L.; West, Donald L.; Williams, Thomas H.; and Yosmali, Krikor, 3,834,505.

Yost, Howard S.; Walker, Wesley Max; and Walker, Dean Max. Air conditioning apparatus for a vehicle cab. 3,834,680, Cl. 261-92.000.

Yosumi, Toshikazu: *See—*
Nishimura, Katsutoshi; Fujisawa, Kiyoji; and Yosumi, Toshikazu, 3,835,405.

Young, John S.: *See—*

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Young Robert B., to AAI Corporation. Puller sabot ammunition with slip seal. 3,834,314, Cl. 102-93.000.

Youngdale, Gilbert A.: *See*—
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Yu, Robert Tapei, to Motorola, Inc. Dynamic MOS TTL compatible. 3,835,457, Cl. 340-173.00r.

Yuasa, Osamu: *See*—
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Yuhara, Hideo: *See*—
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Yukinaga, Hisajiro: *See*—
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Zahnradfabrik Friedrichshafen Aktiengesellschaft: *See*—
Maurer, Gerhard; and Geiger, Fritz, 3,834,503.

Zahradka, Pavel; Bozejovska, Libuse; and Dvorakova, Alena, to Elitex Zavody textilniho Strojirenstvi generalni reditelstvi. Cam system for double cylinder knitting machine. 3,834,187, Cl. 66-14.000.

Zaidan Hojin Biseibutsu Kagakyu Kenkyu Kai: *See*—
Umezawa, Hamao; Tanabe, Osamu; and Takeuchi, Tomio, 3,835,170.

Zajichek, William J., to Allis-Chalmers Corporation. Isolated tractor platform. 3,834,754, Cl. 296-35.00r.

Zakharov, Leonod Stepanovich: *See*—
Kakhovsky, Nikolai Ivanovich; Vakulenko, Anatoly Nikolaevich; Zakharov, Leonod Stepanovich; Lipodaev, Vladimir Nikolaevich; Fartushny, Vladimir Grigorievich; Kakhovsky, Jury Nikolaevich; Boiko, Vily Arsentievich; Sidlin, Zinovy Abramovich; and Juschenko, Knstantin Andreevich, 3,835,289.

Zako Rohrverbindungen GmbH & Co. KG: *See*—
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Zdanowski, Richard E., to Rohm and Haas Company. Method of removing floor polish comprising copolymer containing α,β-ethylenically unsaturated carboxylic acid and polyvalent metal compounds. 3,835,078, Cl. 260-28.50a.

Zee-Cheng, Kwang Yuen; and Cheng, Chia-Chung, to United States of America, Health, Education and Welfare. Process for the preparation of dehydroberbinium salts. 3,835,140, Cl. 260-283.0sy.

Zegafuse, Donald W. Jr.: *See*—
Dattilo, Anthony J.; and Zegafuse, Donald W. Jr., 3,835,249.

Zeiss-Stiftung, Carl: *See*—
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Zeitlin, Bruce A.: *See*—
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Zenith Radio Coroporation: *See*—
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Zenith Radio Corporation: *See*—
Moritz, Scott N.; Polley, Eugene; and Puls, Werner H., 3,835,262.

Ziaylek, Theodore, Jr., to Yardley Products Corporation. Ultrasonic inserts. 3,834,438, Cl. 151-41.730.

Zimmer, Peter. Rotary screen interrupter with squeegee lift means. 3,834,307, Cl. 101-115.000.

Zimmer, Peter. Rotary screen printer with programmable screen interrupt. 3,834,309, Cl. 101-715.000.

Zimmerman, Howard F., Jr.: *See*—
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Zimmerman, Margaret J.: *See*—
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Zimmermann, Frederick N.: *See*—
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Zine, Anthony R., Jr., to Corning Glass Works. Container and partioning system for tubular objects. 3,834,526, Cl. 206-437.000.

Zingaro, William P. Selectable multi-window X-ray tube. 3,835,341, Cl. 313-59.000.

Zinnes, Harold; and Lindo, Neil A., to Warner-Lambert Company. Acyl derivatives of 4-hydroxy-2H-1-benzothiopyran-3-carboxamide 1,1-dioxide. 3,835,156, Cl. 260-327.0th.

Zirphile, Jean, to Societe Generale de Constructions Electriques et Macaniques (Alsthom). Coding system for stochastic representation. 3,835,452, Cl. 340-146.200.

Zittel, David R.; and Ajero, Fortunato, to Hughes Company, Inc. Container filling apparatus. 3,834,431, Cl. 141-131.000.

Zoleta, Jose C. Method and apparatus for generating electrical voltage of amplitude varying with time. 3,835,369, Cl. 323-44.00f.

Zubas, John D.: *See*—
Hoeschele, David F., Jr.; and Zubas, John D., 3,835,385.

Zumstein, Ernst, to Bystronic Maschinen AG. Apparatus for the simultaneous machining of a material moving with relative motion respect to the tools, in particular for cutting up a plate of glass. 3,834,258, Cl. 83-11.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 10TH DAY OF SEPTEMBER, 1974

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

American Optical Corp.: *See*—
Coates, Vincent J., and Welter. Re. 28,153.

Coates, Vincent J., and L. M. Welter, to American Optical Corp. Field emission scanning microscope display. Re. 28,153, 9–10–74, Cl. 250—311.

Cook, Paul M. Tube driving apparatus. Re. 28,151, 9–10–74, Cl. 173—91.

Dow, Norris F., to Doweave, Inc. Triaxial fabric. Re. 28,155, 9–10–74, Cl. 139—383.

Doweave, Inc.: *See*—
Dow, Norris F. Re. 28,155.

Kiuchi, Yuji, K. Shimizu, and O. Yoshida, to Tokyo Shibaura Electric Co., Ltd. Photoconductive target with N-type layer of cadmium selenide including cadmium chloride and cuprous chloride. Re. 28,156, 9–10–74, Cl. 313—94.

McDonnell Douglas Corp.: *See*—
Waters, Elmer D. Re. 28,152.

Shimizu, Kazuo: *See*—
Kiuchi, Yuji, Shimizu, and Yoshida. Re. 28,156.

Skuttle Mfg. Co.: *See*—
Stiles, Walter R. Re. 28,154.

Stiles, Walter R., to Skuttle Mfg. Co. Wall or duct mounted humidistat. Re. 28,154, 9–10–74, Cl. 317—120.

Tokyo Shibaura Electric Co., Ltd.: *See*—
Kiuchi, Yuji, Shimizu, and Yoshida. Re. 28,156.

Waters, Elmer D., to McDonnell Douglas Corp. Oil well permafrost stabilization system. Re. 28,152, 9–10–74, Cl. 166—57.

Welter, Leonard M.: *See*—
Coates, Vincent J., and Welter. Re. 28,153.

Wycoff, Keith H. Transmitter with means for generating the carrier wave before generating the modulation components. Re. 28,157, 9–10–74, Cl. 325—155.

Yoshida, Okio: *See*—
Kiuchi, Yuji, Shimizu, and Yoshida. Re. 28,156.

LIST OF PLANT PATENTEES

Ball, Geo. J., Inc.: *See*—
Fischer, Arnold W. 3,611.
Fischer, Arnold W. 3,612.
Fischer, Arnold W. 3,613.
Fischer, Arnold W. 3,614.

Conard-Pyle Co., The: *See*—
Williams, J. Benjamin. 3,615.

Fischer, Arnold W., to Geo. J. Ball, Inc. Violet plant. 3,611, 9–10–74, Cl. 69.

Fischer, Arnold W., to Geo. J. Ball, Inc. African violet. 3,612, 9–10–74, Cl. 69.

Fischer, Arnold W., to Geo. J. Ball, Inc. African violet. 3,613, 9–10–74, Cl. 69.

Fischer, Arnold W., to Geo. J. Ball, Inc. African violet. 3,614, 9–10–74, Cl. 69.

Frampton's Nurseries Ltd.: *See*—
Machin, Barrie J. 3,616.

Machin, Barrie J., to Frampton's Nurseries Ltd. Chrysanthemum plant. 3,616, 9–10–74, Cl. 78.

Williams, J. Benjamin, to The Conard-Pyle Co. Rose plant. 3,615, 9–10–74, Cl. 6.

LIST OF DESIGN PATENTEES

AAI Corp.: *See*—
Abbott, David D. 232,723—730.

Abbott, David D., to AAI Corp. Projective nose. 232,723, 9–10–74, Cl. D22—10.

Abbott, David D., to AAI Corp. Projectile. 232,724, 9–10–74, Cl. D22—10.

Abbott, David D., to AAI Corp. Cartridge. 232,725, 9–10–74, Cl. D22—10.

Abbott, David D., to AAI Corp. Projectile nose. 232,276, 9–10–74, Cl. D22—10.

Abbott, David D., to AAI Corp. Projectile nose. 232,727, 9–10–74, Cl. D22—10.

Abbott, David D., to AAI Corp. Projectile. 232,728, 9–10–74, Cl. D22—10.

Abbott, David D., to AAI Corp. Cartridge. 232,729, 9–10–74, Cl. D22—10.

Abbott, David D., to AAI Corp. Projectile nose. 232,730, 9–10–74, Cl. D22—10.

Abe, Isamu: *See*—
Iwagami, Akikazu, and Abe. 232,694.

Acousis Co.: *See*—
Kryter, Karl D. 232,782.

Adams, Oral S.: *See*—
Turnipseed, Iven E., and Adams. 232,691.

Altier, Anthony L., to Indian Industries, Inc. Broadhead for hunting arrow. 232,731, 9–10–74, Cl. D22—12.

American Standard Inc.: *See*—
Payne, George. 232,783.

Aries, Graham J., to Tower Housewares Ltd. Fish cooker. 232,688, 9–10–74, Cl. D7—85.

Aries, Graham J., to Tower Housewares Ltd. Combined fry-pan and lid therefor. 232,690, 9–10–74, Cl. D7—95.

Astec Industries, Inc.: *See*—
Mize, Erbie G., and Smith. 232,719.

Au, Ser-Kit, and M-S, Lui. Radio receiver. 232,769, 9–10–74, Cl. D56—4.

Audette, Raymond P. Display rack. 232,682, 9–10–74, Cl. D6—186.

Bartunek, William, to P. R. Mallory & Co., Inc. Flashlight battery clamp for a bicycle. 232,699, 9–10–74, Cl. D8—247.

Bendix Home Systems, Inc.: *See*—
Eacret, Dan P. 232,718.

Berger, Robert P. Incisal packing tool. 232,734, 9–10–74, Cl. D24—1.

Bernstein, Bernard. Charm or similar article. 232,754, 9–10–74, Cl. D45—17.

Bettonica, Franco, to Perlier S.p.A. Bottle. 232,701, 9–10–74, Cl. D9—83.

Bettonica, Franco, to Perlier S.p.A. Bottle. 232,702, 9–10–74, Cl. D9—83.

Bliss, Beatrice, to Blisscraft of Hollywood. Shelf. 232,681, 9–10–74, Cl. D6—186.

Blisscraft of Hollywood: *See*—
Bliss, Beatrice. 232,681.

Boeing Co., The: *See*—
Kirchner, Mark E., and Whitener. 232,711.
Brown, Robert B. 232,712.
Cook, William H., Wimpress, Pennell, and Person. 232,713.

Bombardier Ltd.: *See*—
Scott, Thomas. 232,674.

Brown, Robert B., to The Boeing Co. Airplane. 232,712, 9–10–74, Cl. D12—80.

Butcher, Ewen. Axle and fenders unit. 232,720, 9–10–74, Cl. D14—2.

Clam Corp.: *See*—
Marrin, Avery. 232,709.

Cook, William H., J. K. Wimpress, M. L. Pennell, and R. P. Person, to The Boeing Co. Aircraft. 232,713, 9–10–74, Cl. D12—80.

Corning Glass Works: *See*—
Gerow, Cynthia S. 232,685.
Reyda, Theodore M. 232,687.

Cosar Corp.: *See*—
Hampton, Perry D., Cox, and Warren. 232,746.

Cox, James R.: *See*—
Hampton, Perry D., Cox, and Warren. 232,746.

Crest Lock Co., Inc.: *See*—
Shelman, Julius. 232,697.

Curtis, John T., to Magnum Automotive Equipment, Inc. Automatic tire changer machine. 232,763, 9–10–74, Cl. D54—13.

Dart Industries Inc.: *See*—
Montesi, Edward N. 232,686.

Davis, Dellies T., and B. D. Motlong, to Research Fuels, Inc. Vehicle for dispensing petroleum products or the like. 232,707, 9–10–74, Cl. D12—14.

De Monbrun, John C. Hat. 232,668, 9–10–74, Cl. D2—257.

Den-Tal-Ez Mfg., Co.: *See*—
Fortnam, George A. 232,777.

Dolco Packaging Corp.: *See*—
Elcholtz, Clara V. 232,684.

ESB Inc.: *See*—
Oakley, Daniel C., Rhoades, and Schmidt. 232,756.

Eacret, Dan P., to Bendix Home Systems, Inc. Modular mobile home with off-center roof peak. 232,718, 9–10–74, Cl. D13—1.

Echterling, Eugene J., to Questor Corp. Trundle toy. 232,751, 9–10–74, Cl. D34—15.

Elcholtz, Clara V., to Dolco Packaging Corp. Dish or similar article. 232,684, 9–10–74, Cl. D7—3.

Eloranta, Viato K., R. Paglia, R. R. Wareham, and N. Gold, to Polaroid Corp. Photographic film cassette or similar article. 232,775, 9–10–74, Cl. D61—1.

Empire Machines, Inc.: *See*—
Sharenow, Stuart. 232,705.

Famolare, Inc.: *See*—
Famolare, Joseph P., Jr. 232,669.

Famolare, Joseph P., Jr., to Famolare, Inc. Clog shoe sole. 232,669, 9–10–74, Cl. D2—322.

Fink, Arthur A.: *See*—
Padilla, Dominick, and Fink. 232,737.

Forchemer, Herbert C. Cart body for pressure washing apparatus. 232,708, 9–10–74, Cl. D12—34.

Forrester, Joseph H. Chest of drawers or similar article. 232,680, 9–10–74, Cl. D6—152.

Fortnam, George A., to Den-Tal-Ez Mfg., Co. Adjustable mounting base for a patient supporting unit. 232,777, 9–10–74, Cl. D83—1.

Franklin, Lester K., deceased, by M. P. Franklin. Clock-radio. 232,765, 9–10–74, Cl. D56—4.

Franklin, Mildred P.: *See*—
Franklin, Lester K., and M. P. 232,765.

Funahashi, Takaji. Stamp case. 232,678, 9–10–74, Cl. D6—130.

Furuyabu, Noriharu: *See*—
Naito, Masatoshi, Swamura, Funatsu, and Furuyabu. 232,689.

Gayle, Stig H., and T. Nilson, to said Hedman assor. to said Nilson. Owl figurine. 232,742, 9–10–74, Cl. D29—23.

General Electric Co.: *See*—
Houlihan, John T. 232,766.

Gerow, Cynthia S., to Corning Glass Works. Plate or the like. 232,685, 9–10–74, Cl. D7—36.

Gold, Nicholas: *See*—
Eloranta, Viato K., Paglia, Wareham, and Gold. 232,775.

Goto, Kenjiro, to Mansei Kogyo Kabushiki Kaisha. Cigarette lighter. 232,757, 9–10–74, Cl. D48—27.

Gourley, Ralph D., to Rival Mfg. Co. Combined electric can opener and knife sharpener. 232,696, 9–10–74, Cl. D8—35.

Greuloch, William E.: *See*—
Hagen, Richard M., Jordan, and Greuloch. 232,778.

Hagen, Richard M., R. L. Jordan, and W. E. Greuloch, to Medtronic, Inc. Medical electrical equipment case. 232,778, 9–10–74, Cl. D83—1.

Hall, Merwin G. Height measuring scale. 232,759, 9–10–74, Cl. D52—6.

Hampton, Perry D., J. R. Cox, and P. J. Warren, to Cosar Corp. Reflection densitometer. 232,746, 9–10–74, Cl. D32—2.

Hedgewick, Peter, to International Tool (1973) Ltd. Wrap-around tail light. 232,758, 9–10–74, Cl. D48—31.

Hedman assor. to said Nilson: *See*—
Gayle, Stig H., and Nilson. 232,742.

Hirasa, Hiroshi, and B. Mishiro, to Matsushita Electric Industrial Co., Ltd. Amplifier. 232,741, 9–10–74, Cl. D26—14.1.

Hirschl, Paul, to Ropa Industries, Inc. Embossed fabric. 232,784, 9–10–74, Cl. D87—3.

Honeywell Inc.: *See*—
Quinn, Peter T. 232,774.

Hoover Co., The: *See*—
Wareham, Richard A. 232,695.

Hoshino, Kunio, K. Takenaka, and M. Miyamoto, to Matsushita Electric Industrial Co., Ltd. Combined radio receiver and clock. 232,771, 9–10–74, Cl. D56—4.

Houlihan, John T., to General Electric Co. Clock-radio. 232,766, 9–10–74, Cl. D56—4.

Howmet Corp.: *See*—
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Kinsey, John O., McVey, Moore, Mulvany, and Yenerich. 232,735.
Yenerich, Philip C. 232,736.

Intercollection Development S.A.: *See*—
Strasale, Alex. 232,675.

International Tool (1973) Ltd.: *See*—
Hedgewick, Peter. 232,758.

Iwagami, Akikazu, and I. Abe, to Sanyo Electric Co., Ltd. Mixer. 232,694, 9–10–74, Cl. D7—159.

Johnson, Virgil H., to Minnesota Mining and Mfg. Co. Acoustic coupler. 232,738, 9–10–74, Cl. D26—14.

Jordan, Robert L.: *See*—
Hagen, Richard M., Jordan, and Greuloch. 232,778.

Kabushiki Kaisha Ricoh: *See*—
Kato, Takaharu. 232,773.

Kabushikikasha Taikodenki Seisakusho: *See*—
Takahashi, Nobuyasu, and Nakamura. 232,740.

Kato, Takaharu, to Kabushiki Kaisha Ricoh. Electronic flash. 232,773, 9–10–74, Cl. D61—1.

Kayhoe, William F. Spoon. 232,692, 9–10–74, Cl. D7—137.

Kawamura, Ken: *See*—
Miyamoto, Masaaki, Kawamura, and Owada. 232,770.

Kimberly-Clark Corp.: *See*—
Thomas, Gordon D. 232,772.

Kinsey, John O., B. W. McVey, D. G. Moore, R. B. Mulvany, and P. C. Yenerich, to International Business Machines Corp. Magnetic disk module. 232,735, 9–10–74, Cl. D26—5.

Kirchner, Mark E., and P. C. Whitener, to The Boeing Co. Airplane. 232,711, 9–10–74, Cl. D12—76.

Kryter, Karl D., to Acousis Co. Tape-reel storage case. 232,782, 9–10–74, Cl. D87—1.

Konzi, Ernst (NMI), Sarah Coventry, Inc. Display container. 232,703, 9–10–74, Cl. D9—237.

Kress, George C.: *See*—
Krumholz, Jerrold J., Reisgen, and Kress. 232,672.

Krumholz, Jerrold J., H. H. V. Reisgen, and G. C. Kress, to Kusan, Inc. Child's chair. 232,671, 9–10–74, Cl. D6—7.

Krumholz, Jerrold J., H. H. V. Reisgen, and G. C. Kress, to Kusan, Inc. Child's bench. 232,672, 9–10–74, Cl. D6—7.

Kusan, Inc.: *See*—
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Krumholz, Jerrold J., Reisgen and Kress. 232,672.

Lab-Line Instruments, Inc.: *See*—
Newman, Alexander I. 232,721.

Lanese, Pasquale J., to The Warner & Swasey Co. Tool holder for a lathe tool, or similar article. 232,760, 9–10–74, Cl. D54—6.

Lanese, Pasquale J., to The Warner & Swasey Co. Tool holder having a lathe tool, or similar article. 232,761, 9–10–74, Cl. D54—6.

Lanese, Pasquale J., to The Warner & Swasey Co. Tool holder for end working tools for a lathe, or similar article. 232,762, 9–10–74, Cl. D54—6.

Langieri, Michael: *See*—
Meyers, Michael R., and Langieri. 232,749.

Langieri, Michael, to Questor Corp. Educational Toy. 232,750, 9–10–74, Cl. D34—15.

Lawlor, John, and J. Sgombick, to Xerox Corp. Clamp. 232,698, 9–10–74, Cl. D8—246.

Levine, Irving. Strand of beads for curtain elements or the like. 232,683, 9–10–74, Cl. D6—205.

Long, James M., to Questor Corp. Golf glove. 232,670, 9–10–74. Cl. D2—361.

Lui, Man-Sing: *See*—
Au, Ser-Kit, and Lui. 232,769.

Lutes, Harold A. Holder for pesticides and the like. 232,732, 9–10–74, Cl. D22—18.

Magnum Automotive Equipment, Inc.: *See*—
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Mallory, P. R., & Co., Inc.: *See*—
Bartunek, William. 232,699.

Mangrum, Lee R. Liquid supplement feeder for cattle. 232,743, 9–10–74, Cl. D30—13.

Mansei Kogyo Kabushiki Kaisha: *See*—
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Marrin, Avery, to Clam Corp. Boat. 232,709, 9–10–74, Cl. D12—62.

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McGrew, James D. Chokeless neck rope for a horse. 232,744, 9–10–74, Cl. D30—19.

McVey, Bernard W.: *See*—
Kinsey, John O., McVey, Moore, Mulvany, and Yenerich. 232,735.

Meyers, Michael R., and M. Langieri. Musical toy. 232,749, 9–10–74, Cl. D34—15.

Minnesota Mining and Mfg. Co.: *See*—
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Hirasa, Hiroshi, and Mishiro. 232,741.

Mishiro, Benito, to Matsushita Electric Industrial Co., Ltd. Radio receiver. 232,768, 9–10–74, Cl. D56—4.

Miyamoto, Masaaki, K. Kawamura, and M. Owada, to Matsushita Electric Industrial Co., Ltd. Radio receiver. 232,770, 9–10–74, Cl. D56—4.

Miyamoto, Masaaki: *See*—
Hoshino, Kunio, Takenaka, and Miyamoto. 232,771.

Mize, Erble G., and W. N. Smith, to Astec Industries, Inc. Control house module or similar article. 232,719, 9–10–74, Cl. D13—1.

Montesi, Edward N., to Dart Industries Inc. Condiment receptacle caddy. 232,686, 9–10–74, Cl. D7—58.

Moore, Norman D. Aircraft. 232,710, 9–10–74, Cl. D12—75.

Morris, Elliott M., to Morris Industries. Wheel. 232,717, 9–10–74, Cl. D12—205.

Morris Industries: *See*—
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Naito, Masatoshi, F. Swamura, K. Funatsu, and N. Furuyabu, to Matsushita Electric Industrial Co., Ltd. Toaster. 9–10–74. Cl. D7—93.

Nakamura, Nobuji: *See*—
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Newman, Alexander I., to Lab-Line Instruments, Inc. Incubator-shaker. 232,721, 9–10–74, Cl. D16—2.

Nilson, Torkel: *See*—
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Noble, Terrance O. Apparatus for measuring liquids. 232,745, 9–10–74. Cl. D32—1.

Oakley, Daniel C., N. K. Rhoades, and A. R. Schmidt, to ESB Inc. Electric lantern. 232,756, 9–10–74, Cl. D48—24.

Oliver, Samuel G. Pan board. 232,676, 9–10–74, Cl. D6—114.

Olson, Donald M., 33⅓ each to Max Morris. Vaginal speculum. 232,779, 9–10–74, Cl. D83—12.

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Owada, Minoru: *See*—
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Paglia, Richard: *See*—
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Pardo, John, to The Procter & Gamble Co. Combined bottle and cap therefor. 232,700, 9–10–74, Cl. D9—71.
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Payne, George, to American Standard Inc. Tote tray. 232,783, 9–10–74, Cl. D87—1.
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Pratt, Lawrence S. Knight chess-man. 232,748, 9–10–74, Cl. D34—5.
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Questor Corp.: *See*—
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Raczkowski, Stefania: *See*—
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Krumholz, Jerrold J., Reisgen, and Kress. 232,672.
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Sheiman, Julius, to Crest Lock Co., Inc. Lock for zipper luggage and the like. 232,697, 9–10–74, Cl. D8—123.
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Swamura, Fujio: *See*—
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Takahashi, Nobuyasu, and N. Nakamura, to Kabushikikasha Taikodenki Seisakusho. Telephone. 232,740, 9–10–74, Cl. D26—14.
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Taylor, Charles P., to Howmet Corp. Picnic table combined with benches. 232,673, 9–10–74, Cl. D6—45.
Thomas, Gordon D., to Kimberly-Clark Corp. Paper toweling or similar article. 232,772, 9–10–74, Cl. D59—2.
Topalis, Stylianos A., to The Quaker Oats Co. Expanded cereal food product. 232,667, 9–10–74, Cl. D1—1.
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Aries, Graham J. 232,688.
Aries, Graham J. 232,690.
Turley, Arthur B. Trash compactor device. 232,764, 9–10–74, Cl. D55—1.
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8 3,833,936
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66R 3,834,988
68 3,834,990
103.5R 3,834,991
139 3,834,992

CLASS 197

1R 3,834,505
3,834,506
6.7 3,834,507
63 3,834,508
3,834,509
120 3,834,510
151 3,834,511
181 3,834,512

CLASS 198

16R 3,834,513
16 3,834,514
27 3,834,515
40 3,834,518
41 3,834,519
110 3,834,520
203 3,834,521
210 3,834,522
220CA 3,834,523
232 3,834,524
266 3,834,517
283 3,834,516

CLASS 200

6A 3,835,270
60 3,835,272
61.48 3,835,273
83Y 3,835,271
148R 3,835,274
153SC 3,835,275
160 3,835,276
249 3,835,278
318 3,835,277
332 3,835,279

CLASS 202

139 3,834,993
174 3,834,994
248 3,834,995

CLASS 203

9 3,834,996
87 3,834,997

CLASS 204

33 3,834,998
56R 3,834,999
78 3,835,000
95 3,835,001
99 3,835,002
159.11 3,835,003
159.17 3,835,004
159.23 3,835,085
180R 3,835,006
181 3,835,005
192 3,835,007
195G 3,835,009
195L 3,835,010
195M 3,835,011
195P 3,835,013
3,835,014
195S 3,835,012
195T 3,835,008
197 3,835,015
224M 3,835,016
224R 3,835,017
228 3,835,018
246 3,835,019
268 3,835,020

CLASS 206

161 3,834,525
437 3,834,526
494 3,834,527
526 3,834,528

CLASS 208

13 3,835,021
15 3,835,022
16 3,835,023
22 3,835,024
25 3,835,025
111 3,835,026
3,835,027
3,835,028
113 3,835,029
120 3,835,030
3,835,031
3,835,032
125 3,835,033
139 3,835,034
181 3,835,035
249 3,835,036
260 3,835,037

CLASS 209

1 3,834,529
3 3,834,530
74M 3,834,531
82 3,834,532
166 3,834,533
326 3,834,534

CLASS 210

4 3,835,038
17 3,835,039
23 3,835,040
27 3,835,041
28 3,835,042
31C 3,835,043
37 3,835,044
49 3,835,045
54 3,835,046
63 3,835,047
3,835,048
3,835,049
75 3,834,535
104 3,834,536
136 3,834,537
154 3,834,538
167 3,834,539
195 3,834,540
219 3,834,541
222 3,834,542
232 3,834,543
321 3,834,544
3,834,545
3,834,546
497.1 3,834,547

CLASS 211

118 3,834,548
148 3,834,549

CLASS 212

39MS 3,834,550
3,834,551
95 3,834,552

CLASS 213

166 3,834,553
3,834,554

CLASS 214

1BE 3,834,556
1BH 3,834,557
1BT 3,834,555
3,834,558
3,834,559
3 3,834,560
38BA 3,834,562
77R 3,834,563
83.26 3,834,564
85 3,834,565
138R 3,834,566
145 3,834,567
307 3,834,568
762 3,834,569

CLASS 215

1E 3,834,570
255 3,834,573
256 3,834,571
272 3,834,572

CLASS 217

19 3,834,574

CLASS 219

10.55 3,835,280
3,835,281
3,835,283
10.57 3,835,282
98 3,835,284
3,835,285
121EB 3,835,291
130 3,835,286
3,835,287
145 3,835,288
146 3,835,289
205 3,835,290
222 3,835,292
300 3,835,293
305 3,835,294
314 3,835,295
553 3,835,296

CLASS 220

1.5 3,834,575
26S 3,834,576
42B 3,834,577
46R 3,834,578
60R 3,834,579
89A 3,834,580
3,834,581

CLASS 221

248 3,834,582
251 3,834,583
312 3,834,584

CLASS 222

1 3,834,585
47 3,834,586
56 3,834,587
61 3,834,588
80 3,834,589
148 3,834,590
185 3,834,591
277 3,834,592
440 3,834,593
464 3,834,594
504 3,834,595
520 3,834,596
525 3,834,597

CLASS 223

89 3,834,598
102 3,834,599

CLASS 226

97 3,834,600
191 3,834,601

CLASS 227

120 3,834,602
156 3,834,603

CLASS 228

5 3,834,604
20 3,834,605

CLASS 229

2.5 3,834,606
14BA 3,834,607
15 3,834,608
28R 3,834,609
40 3,834,610
54R 3,834,611

CLASS 232

25 3,834,612

CLASS 233

23A 3,834,613

CLASS 235

61GM 3,835,298
61NV 3,835,299
61.11A 3,835,301
61.11E 3,835,297
3,835,300
64.3 3,834,614
92NG 3,835,302
92SB 3,835,306
144HC 3,835,303
151.11 3,834,615
151.3 3,835,304
151.34 3,835,305
160 3,834,616

CLASS 236

1C 3,834,617
46 3,834,618

CLASS 237

81 3,834,619

CLASS 238

287 3,834,620

CLASS 239

76	3,834,621
132.1	3,834,622
139	3,834,623
214.15	3,834,624
227	3,834,625
265.13	3,834,626
430	3,834,627
542	3,834,628
594	3,834,629

CLASS 240

1	3,835,307
10C	3,835,308
10.6CH	3,835,309
10.65	3,835,310
54R	3,835,311

CLASS 241

19	3,834,630
24	3,834,561
26	3,834,631
187	3,834,632
295	3,834,633

CLASS 242

35.6R	3,834,634
47.01	3,834,635
55.2	3,834,636
65	3,834,637
67.1R	3,834,638
68	3,834,639
68.3	3,834,640
72.1	3,834,641
75.5	3,834,642
78.7	3,834,643
84.2G	3,834,644
107.7	3,834,645
	3,834,646
130.2	3,834,647
186	3,834,648
191	3,834,649
192	3,834,650
199	3,834,651
205	3,834,652

CLASS 244

1SA	3,834,653
13	3,834,654
135R	3,834,655

CLASS 248

13	3,834,656
23	3,834,657
205R	3,834,658
245	3,834,659
418	3,834,660

CLASS 250

206	3,835,313
213VT	3,835,314
231P	3,835,316
260	3,835,317
281	3,835,318
290	3,835,319
311	Re.28,153
	3,835,320
315	3,835,321
343	3,835,322
360	3,835,323
	3,835,324
366	3,835,325
393	3,835,326
398	3,835,327
432	3,835,328
484	3,835,329
493	3,835,330
552	3,835,331
563	3,835,332
574	3,835,315

CLASS 251

89	3,834,661
121	3,834,662
173	3,834,663
174	3,834,664
349	3,834,665
361	3,834,666

CLASS 252

28	3,835,050
33.6	3,835,051
49.5	3,835,052
59	3,835,053
62	3,835,054
62.2	3,835,055
78	3,835,056
107	3,835,057
121	3,835,058
305	3,835,059
332	3,835,060
359A	3,835,061
408	3,835,062
415	3,835,063
423	3,835,064
429C	3,835,065
429R	3,835,066
447	3,835,067
455Z	3,835,068
462	3,835,069
526	3,835,070
545	3,835,071

CLASS 254

2R	3,834,667
29R	3,834,668
133	3,834,669
150R	3,834,670
158	3,834,671
172	3,834,672
175.5	3,834,673
190R	3,834,674

CLASS 260

2.1C	3,835,072
2.5B	3,835,073
17	3,835,074
17.4BB	3,835,075
17.4SG	3,835,116
23EP	3,835,076
28	3,835,077
28.5AS	3,835,117
28.5A	3,835,078
	3,835,079
29.2TN	3,835,081
29.2R	3,835,080
29.3	3,835,082
29.4R	3,835,083
29.6MN	3,835,148
29.6NR	3,835,084
33.6UA	3,835,086
	3,835,088
33.6R	3,835,087
38	3,835,118
40R	3,835,089
42.15	3,835,090
42.45	3,835,091
45.75R	3,835,119
45.85S	3,835,095
45.9R	3,835,092
	3,835,093
	3,835,094
47CP	3,835,120
67FP	3,835,096
	3,835,097
75N	3,835,098
	3,835,099
77.5NC	3,835,121
78SC	3,835,101
78P	3,835,100
78.5T	3,835,122
80.6	3,835,103
80.78	3,835,104
87.1	3,835,105
94.9B	3,835,123
94.9P	3,835,106
94.9R	3,835,107
112.5	3,835,108
	3,835,109
	3,835,110
209.5	3,835,111
211R	3,835,112
216	3,835,113
233.3R	3,835,114
239.1	3,835,115
239.3A	3,835,124
239.3B	3,835,125
239.55	3,835,127
239.9	3,835,126
240J	3,835,128
243B	3,835,131
243C	3,835,129
	3,835,130
247.5D	3,835,132
248NS	3,835,133
248A	3,835,136
248C	3,835,134
	3,835,135
256.4F	3,835,137
	3,835,138
279R	3,835,139
283SY	3,835,140
283S	3,835,141
286R	3,835,142
294.8E	3,835,145
294.8T	3,835,143
295R	3,835,146
295.5B	3,835,144
	3,835,147
297R	3,835,149
302A	3,835,150
309.5	3,835,151
315	3,835,152
326C	3,835,154
	3,835,155
326.43	3,835,153
327TH	3,835,156
332.2A	3,835,157
	3,835,158
340.3	3,835,159
340.9	3,835,160
343.2R	3,835,161
346.8R	3,835,162
347.3	3,835,163
347.4	3,835,164
347.5	3,835,165
348R	3,835,166
351	3,835,167
396R	3,835,168
397.2	3,835,169
438.1	3,835,170
453PH	3,835,172
455A	3,835,171
456A	3,835,173
	3,835,174
463	3,835,175
465D	3,835,176
465R	3,835,177
	3,835,178
465.5	3,835,182
468D	3,835,179
	3,835,180
	3,835,181
505C	3,835,183
533A	3,835,185
544M	3,835,186
	3,835,187
553DA	3,835,188
558D	3,835,189
559	3,835,190
562A	3,835,184
566R	3,835,191
586R	3,835,192
604R	3,835,193
606.5F	3,835,194
607A	3,835,195
608	3,835,196
666PY	3,835,197
674A	3,835,198
683.3	3,835,199
876B	3,835,200
897A	3,835,201
933	3,835,202
935	3,835,203
938	3,835,204
	3,835,205
983	3,835,206

CLASS 261

18A	3,834,675
36A	3,834,676
39B	3,834,677
41D	3,834,678
	3,834,679
92	3,834,680
111	3,834,681
123	3,834,682
138	3,834,683

CLASS 264

41	3,835,207
45	3,835,208
51	3,835,209
61	3,835,210
66	3,835,211
76	3,835,212

CLASS 266

21	3,834,684
41	3,834,685

CLASS 267

116	3,834,686

CLASS 269

7	3,834,687
42	3,834,688

CLASS 270

41	3,834,689

CLASS 271

80	3,834,690
100	3,834,691

CLASS 272

52.5	3,834,692
57B	3,834,693
58	3,834,694
60A	3,834,695
79C	3,834,696

CLASS 273

IB	3,834,697
72A	3,834,698
73D	3,834,699
77R	3,834,700
85C	3,834,701
86B	3,834,702
89	3,834,703
102R	3,834,704
106A	3,834,705
122R	3,834,706
126A	3,834,707
132	3,834,708
134AD	3,834,709
138A	3,834,710
141A	3,834,711
143R	3,834,712
145E	3,834,713
183D	3,834,714

CLASS 277

1	3,834,715
9	3,834,716
134	3,834,717
166	3,834,718
170	3,834,719

CLASS 279

1L	3,834,720

CLASS 280

7.15	3,834,721
11.13K	3,834,722
11.35D	3,834,723
33.99H	3,834,724
79.2	3,834,725
87.04R	3,834,726
96	3,834,727
150AB	3,834,729
150SB	3,834,730
150B	3,834,728
150.5	3,834,731
154.5R	3,834,732
251	3,834,733
261	3,834,734
407	3,834,736
423R	3,834,735
502	3,834,737
504	3,834,738

CLASS 281

21	3,834,739

CLASS 285

55	3,834,740
226	3,834,741
249	3,834,742
	3,834,743
373	3,834,744

CLASS 292

38	3,834,747
290	3,834,746
320	3,834,748
339	3,834,745

CLASS 294

15	3,834,749
87.2	3,834,750
104	3,834,751

CLASS 296

1S	3,834,752
10	3,834,753
35R	3,834,754
97G	3,834,755
136	3,834,756

CLASS 297

277	3,834,757
389	3,834,758
445	3,834,759

CLASS 299

5	3,834,760
10	3,834,761
43	3,834,762
85	3,834,763
86	3,834,764

CLASS 301

9DN	3,834,766
37R	3,834,765

CLASS 302

60	3,834,768

CLASS 303

6R	3,834,769
7	3,834,767
21P	3,834,770

CLASS 305

25	3,834,771

CLASS 307

64	3,835,333
69	3,835,334
116	3,835,335
234	3,835,336
279	3,835,337

CLASS 308

36.3	3,834,775
132	3,834,773
137	3,834,774
196	3,834,772

CLASS 310

8.6	3,835,338
9.8	3,835,340
13	3,835,339

CLASS 312

108	3,834,776
209	3,834,777
	3,834,778
214	3,834,779
219	3,834,780
229	3,834,781
248	3,834,782
253	3,834,783
257SK	3,835,354
350	3,834,784

CLASS 313

59	3,835,341
94	Re.28,156
114	3,835,342
217	3,835,343
273	3,835,344
358	3,835,345
394	3,835,346
408	3,835,347

CLASS 315

27TD	3,835,348
194	3,835,349
209T	3,835,350
241P	3,835,351

CLASS 317

120	Re.28,154
130	3,835,352
244	3,835,353
262A	3,835,355

CLASS 318

221R	3,835,356
327	3,835,357
	3,835,358
467	3,835,359
561	3,835,360
	3,835,361

CLASS 320

25	3,835,362
64	3,835,363

CLASS 321

2	3,835,364
11	3,835,365
45R	3,835,366

CLASS 322

2R	3,835,367

CLASS 323

17	3,835,368
44F	3,835,369
78	3,835,370

CLASS 324

3	3,835,371
2RR	3,835,372
34PS	3,835,373
37	3,835,374
43R	3,835,375
	3,835,376
46	3,835,377
57R	3,835,378
58B	3,835,379
72	3,835,380
158P	3,835,381
161	3,835,382
186	3,835,383

CLASS 325

25	3,835,384
38B	3,835,385
50	3,835,386
55	3,835,387
64	3,835,388
	3,835,389
105	3,835,390
136	3,835,391
155	Re.28,157
306	3,835,392
308	3,835,393
321	3,835,394
459	3,835,395

CLASS 328

41	3,835,396
155	3,835,397
164	3,835,398
167	3,835,399
168	3,835,400
172	3,835,401
181	3,835,402
186	3,835,403

CLASS 329

104	3,835,404
126	3,835,405

CLASS 330

5	3,835,407
10	3,835,408
13	3,835,409
19	3,835,410
27	3,835,406
31	3,835,411
207P	3,835,412

CLASS 331

1A	3,835,413
94.5L	3,835,417
94.5P	3,835,416
94.5S	3,835,415
94.5	3,835,414
141	3,835,418

CLASS 332

16R	3,835,419

CLASS 333

24.2	3,835,420
26	3,835,421
72	3,835,422
98M	3,835,423

CLASS 334

87	3,835,424

CLASS 335

132	3,835,425
210	3,835,426
231	3,835,427
288	3,835,428

CLASS 336

82	3,835,429
83	3,835,430

CLASS 337

161	3,835,431
247	3,835,432
382	3,835,433

CLASS 338

22	3,835,434
280	3,835,435

CLASS 339

5L	3,835,436
14P	3,835,437
14R	3,835,438
19	3,835,439
22B	3,835,440
45	3,835,441
59R	3,835,442
90R	3,835,443
98	3,835,444
99R	3,835,445

CLASS 340

3R	3,835,446
	3,835,447
6R	3,835,448
38R	3,835,449
52F	3,835,450
58	3,835,451
146.2	3,835,452
146.3SY	3,835,453
171R	3,835,454
172.5	3,835,312
	3,835,455
	3,835,456
173R	3,835,457
	3,835,458
173.2	3,835,459
271	3,835,460
274	3,835,461
279	3,835,462
324A	3,835,464
324M	3,835,463
324R	3,835,465
334	3,835,466
347DD	3,835,467
365R	3,835,468

CLASS 343

754	3,835,469

CLASS 350

3.5	3,834,785
	3,834,786
	3,834,787
97	3,834,789
157	3,834,790
160LC	3,834,791
	3,834,792
	3,834,794
160R	3,834,793
161	3,834,795
187	3,834,796

CLASS 352

12	3,834,797
84	3,834,788
104	3,834,798

CLASS 353

27	3,834,799
	3,834,800
120	3,834,801

CLASS 354

42	3,834,039
246	3,834,802

CLASS 355

1	3,834,803
3DD	3,834,806
3R	3,834,804
	3,834,807
	3,834,808
	3,834,809
	3,834,810
8	3,834,805
18	3,834,811
46	3,834,812
50	3,834,813
51	3,834,814
91	3,834,815

CLASS 356

28	3,834,816
83	3,834,817
102	3,834,818
156	3,834,819
164	3,834,820
181	3,834,821
200	3,834,822

CLASS 401

198	3,834,823

CLASS 402

13	3,834,824

CLASS 403

374	3,834,826
378	3,834,825

CLASS 404

133	3,834,827

CLASS 408

92	3,834,828
179	3,834,829

CLASS 415

30	3,834,830

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CLASS 416

95	3,834,831
230	3,834,832
241	3,834,833

CLASS 417

179	3,834,834
209	3,834,835
222	3,834,836
298	3,834,837
490	3,834,838
505	3,834,839
535	3,834,840

CLASS 418

26	3,834,841
75	3,834,842
84	3,834,843
	3,834,844
142	3,834,845
255	3,834,846

CLASS 423

9	3,835,213
10	3,835,214
167	3,835,215
332	3,835,216
499	3,835,217
519	3,835,218
555	3,835,219

CLASS 424

17	3,835,220
20	3,835,221

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72	3,834,847
136	3,834,848
206	3,834,849
222	3,834,850
261	3,834,851
326B	3,834,852
336	3,834,853

CLASS 426

49	3,835,222
92	3,835,223
130	3,835,224
208	3,835,225
213	3,835,226

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9	3,834,854
11	3,834,855
30	3,834,856
158	3,834,857
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CLASS 432

18	3,834,859
58	3,834,860
60	3,834,861
106	3,834,862
121	3,834,863
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241	3,834,865

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D1—	1	232,667
D2—	257	232,668
	322	232,669
	361	232,670
D6—	7	232,671
		232,672
	45	232,673
	48.1	232,674
	56	232,675
	114	232,676
	127	232,677
	130	232,678
	146	232,679
	152	232,680
	186	232,681
		232,682
	205	232,683
D7—	3	232,684
	36	232,685
	58	232,686
	59	232,687
	85	232,688
	93	232,689
	95	232,690
	123	232,691
	137	232,692
		232,693
	159	232,694
	170	232,695
D8—	35	232,696
	123	232,697
	246	232,698
	247	232,699
D9—	71	232,700
	83	232,701
		232,702
	237	232,703
	291	232,704
D10—	120	232,705
	126	232,706
D12—	14	232,707
	34	232,708
	62	232,709
	75	232,710
	76	232,711
	80	232,712
		232,713
	102	232,714
	141	232,715
	155	232,716
	205	232,717
D13—	1A	232,718
	R	232,719
D14—	2	232,720
D16—		232,721
D18—	R	232,722
D22—	10	232,723
		232,724
		232,725
		232,726
		232,727
		232,728
		232,729
		232,730
	12	232,731
	18	232,732
	27	232,733
D24—	1	232,734
D26—	5C	232,735
		232,736
	14A	232,738
		232,739
		232,740
	F	232,737
	L	232,741
D29—	23B	232,742
D30—	13	232,743
	19	232,744
D32—	1	232,745
	2	232,746
D34—	4R	232,747
		232,752
	5CH	232,748
	15A	232,750
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D35—	3R	232,753
D45—	17	232,754
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D54—		232,760
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		232,762
	13R	232,763
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		232,766
		232,767
		232,768
		232,769
		232,770
		232,771
D59—	2A	232,772
D61—	1F	232,773
	S	232,774
	T	232,775
D74—	C	232,776
D83—	E	232,777
	F	232,778
	12R	232,779
		232,780
		232,781
D87—	1D	232,782
	R	232,783
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DESIGN PATENTS

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PLANT PATENTS

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